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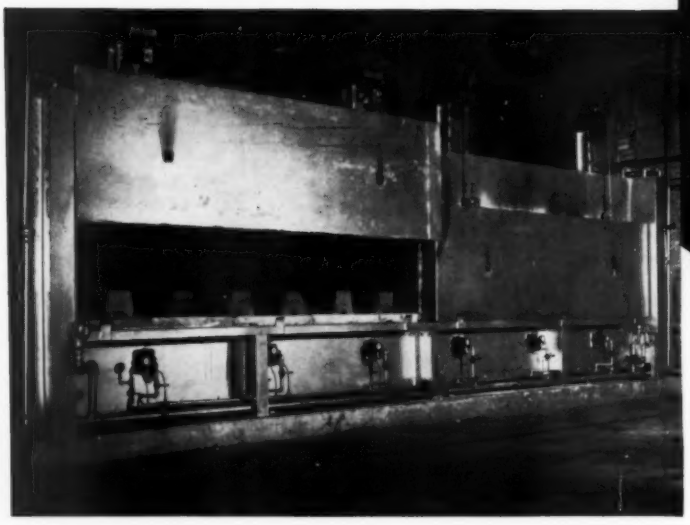

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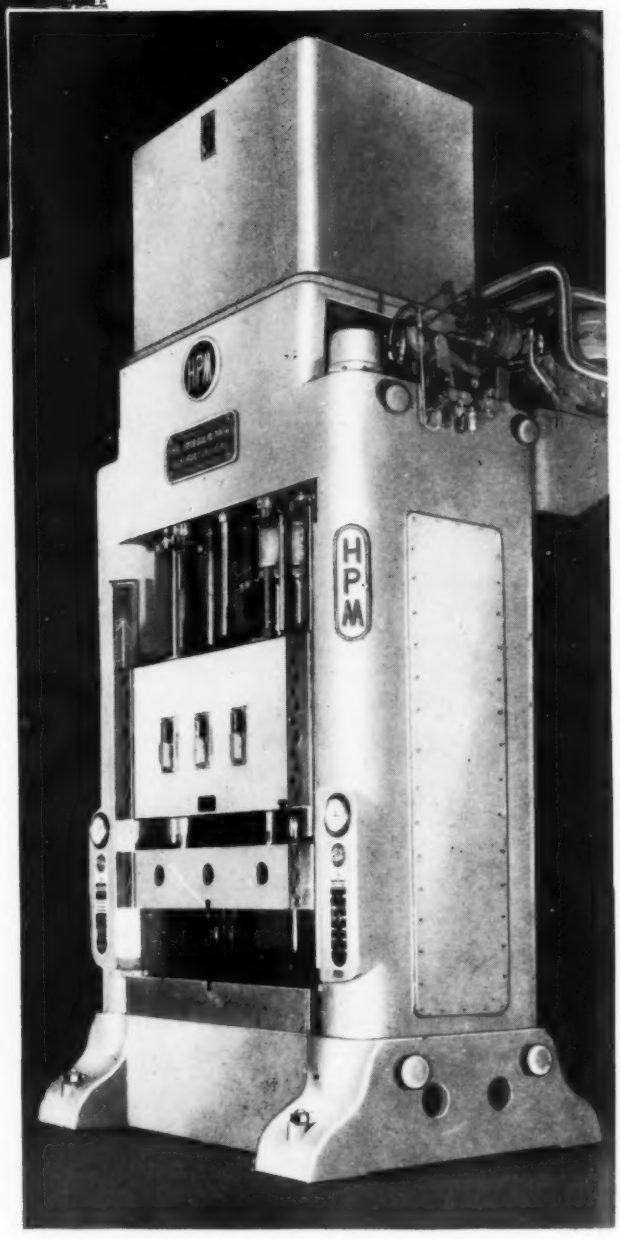

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THE Finish Line

ON WITH THE SHOW—There are plastics, paints, synthetic finishes, bright metals, glass, wood and a myriad of products represented — but where is porcelain enamel? This terse description might readily be used to describe most of national and sectional shows and exhibits held periodically throughout the country to display industrial, commercial and household products. There are metal shows, furniture shows, building shows, gas and electric appliance conventions and various technical group meetings to mention only a few.

The competitors are there

When the doors open to important national exhibits where porcelain enamel or its competing products form an important part of the products on display, you can count on one thing — the competitive materials will be there. If you had walked into the record-breaking Building Exposition in Chicago recently you would have seen most of the friendly competitors — but no porcelain enamel exhibit.

Let's look over the exhibitors' list for the International Lighting Exposition to be held April 26-30. Here again we find competing products listed — but not porcelain enamel. A typical sectional meeting is that of the Chicago Technical Societies Council, with some 70,000 members. Here, again, we see competing materials — but no porcelain enamel. We could go on and on, but you get the point.

Yes, there may be too many meetings, but you can bank on it that the groups sponsoring them consider them important, and form many buying habits from the materials and products whose manufacturers consider them important enough to be on hand.

A start has been made

Many of us will remember the "Porcelain Enamel Parade" and porcelain enameled homes at the Chicago World's Fair. Also, the industry was represented at the New York World's Fair. Good opportunities to hit a cross section of the buying public — but we can't depend upon the effect of World's Fair exhibits alone.

It was gratifying to see three separate booths representing porcelain enamel at the annual stove convention in Cincinnati last December. A good start — and it should be continued. But we can't afford to stop with the stove industry, even though it has been the most important single market for porcelain enameled metal.

A big job

It will be obvious that if our industry is to attempt to present constructive and effective exhibits at all of the important "shows" where we *should* be represented, we are undertaking a sizeable job. While a national organization or organizations may find it possible to include the more important national meetings in their budgets, there are also many important sectional and local exhibits to consider. Here's where our sectional and local organizations, and individual companies operating in the vicinity, can take over. Companies can do an effective job for themselves and at the same time serve the industry's cause.

A balanced program

To avoid leaving an impression that we are "slap happy" on "shows," we suggest that any effort along this line of constructive educational activity should be in addition to, and not a replacement of, the educational and promotional activity now being carried out by organizations and companies within the porcelain enameling field.

A good program is a well balanced program, and, in our opinion, there *is* a place for exhibits and demonstrations before the organizations of greatest importance to us.

Make them good

If the suggestion were to be followed for expanding the use of exhibit space to sell our products, it should only be followed in instances where the importance is considered great enough to warrant an *effective* showing.

The good points of porcelain enamel finishes are all too obvious to most of us, but they have never been made sufficiently obvious to those who buy, sell and use them.

There are proved methods of demonstrating porcelain enamel's outstanding points, and of so dramatizing them that they will be remembered. When, as and if we do plan and execute a greater number of exhibits, let's make sure they are planned to employ such effective methods that a definite and dramatic story will remain with those who are contacted.

Dana Chase

EDITOR AND PUBLISHER

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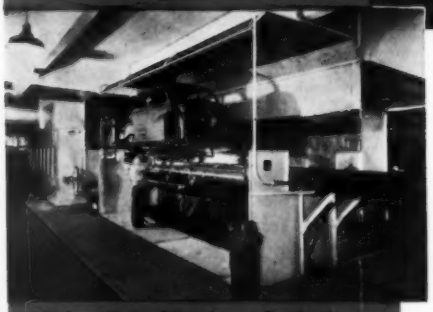

Mahon Hydro-Filter Spray Booths for painting underside of Automobile Bodies—part of same installation.

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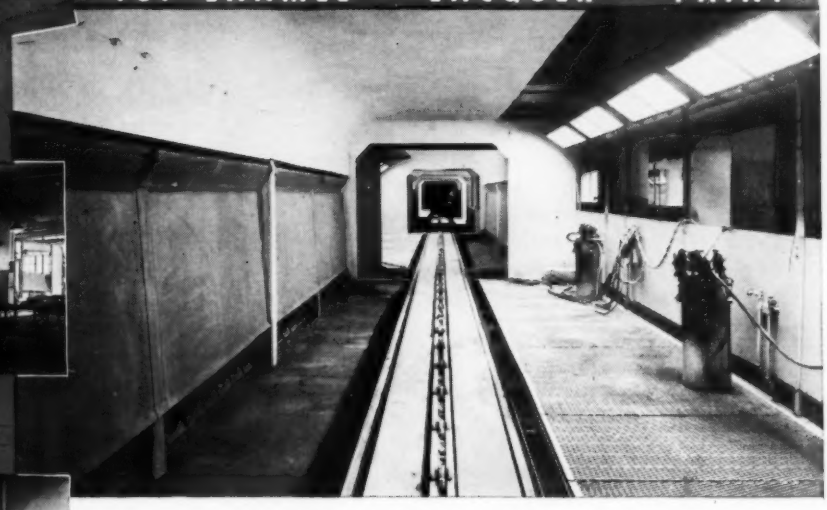

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Enameling methods

in a high production refrigerator plant

a story of some of the reconversion problems at Servel, Inc., plus a detailed outline of porcelain enameling procedure.

By Gerald Eldridge Stedman

Exclusive feature finish

"We of Servel have always believed," Louis Ruthenburg, president, Servel, Inc., Evansville, Indiana, told me in mid-January, "that we can work out any problem if we work hard enough. We resolve our consternations by action. No one in the plant has ever formed the habit of hedging. It was perhaps because problems of reconversion have been more intense than any encountered in war production that we have conquered them more speedily. The boys in the shop, long accustomed to working together, seem to thrive on difficulties. They have certainly had plenty of them since V-J day."

Later, I watched the two Servel gas refrigerator assembly lines with W. E. Baker, vice president in charge of manufacturing. He commented, "This line flow is within 5 per cent of full production, Stedman. Back of its success are headaches no one knows about. Our effort has not alone been to re-establish full production on products formerly manufactured, but, as well, to tool up for new products, such as our new compressor in the electrical refrigeration division, our new automatic water heater line, and our all-year air conditioning equipment. All this has meant reconditioning of over 1500 dies and development of more than 5,000 new machines, tools, dies and fixtures. We're well along now and it has been accomplished since V-J day."

An "orphan" department comes to life

A book could be written of the varied Servel post war production activities. I shall concern myself particularly in this article with the technique employed in the porcelain enameling of refrigerator cabinet inner liners, holloware and flatware. Though the cleaning and pickling equipment of the enameling department played an important part in Servel's production of land mines, in that parts saturated with oil were cleaned in these tanks to make painting possible, porcelain enameling equipment, generally, lay idle and has had to be entirely refurbished since V-J day.

The three personalities most responsible for this are H. L. Axford (12), superintendent, cabinet division; Sheldon Lloyd (9), ceramic engineer; and H. P. Juncker (12), general foreman, porcelain enameling division. The figures behind their names indicate their years of association with the company. This length of experience among the key men is perhaps one of the most important reasons why a high rate of production was so swiftly attained in the porcelain enameling plant. I will quote generously from these men who guided me personally on a detailed observation of the enameling department.

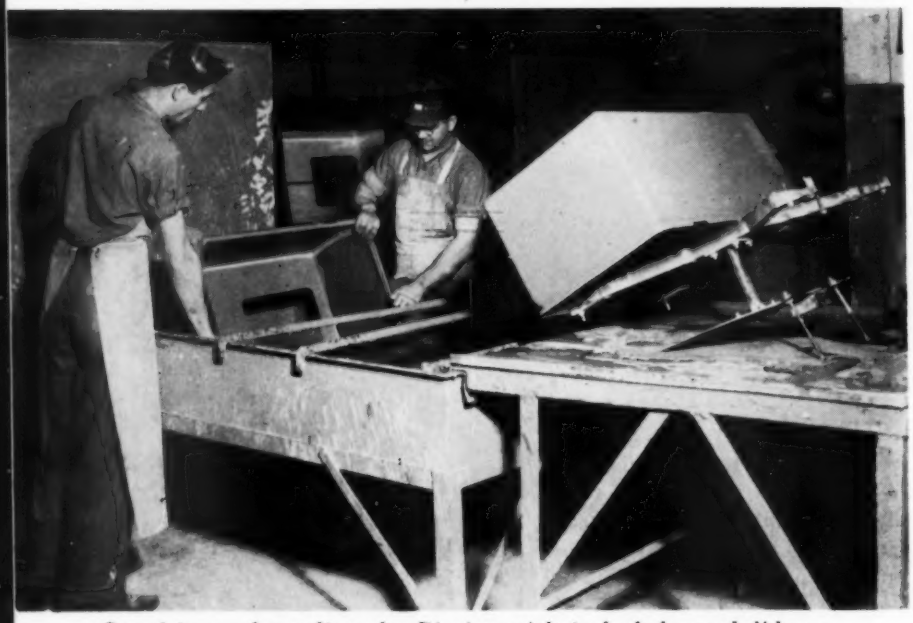
Servel's engineering staff is housed in its own engineering and research building, possessing multi-laboratoried facilities and a staff of 185 engineers. An important cell of this engineering set-up is the porcelain enamel laboratory, in charge of Sheldon Lloyd. The laboratory is quite completely equipped to serve, when needs be, as pilot plant. "We are constantly making exhaustive tests," A. C. Shuart, assistant chief engineer, told me, "of new frits and materials. We receive more ideas from these tests than in any other way. We pilot every new development before giving it production trial; all this is in addition to the constant engineering control we maintain over all enameling practise."

A well equipped laboratory

The laboratory is equipped with a Reflectometer to measure opacity and reflectance of surfaces. There is a thickness gage to measure thickness and uniformity of enamel coatings.

Mr. Ruthenburg and Mr. Baker discuss manufacturing problems.

All pickle room solutions and solution temperatures are checked each hour.



One of 4 ground coat dip tanks. Dipping weight is checked every half hour.

Heat is applied to holloware on the conveyor to eliminate back runs.

It is now a recognized fact that on flatware the thinner the coat having equivalent or better covering power, the less hazard of mechanical damage. Mr. Shuart mentioned a recent successful development where percentage of whiteness of the first white coat had been increased 90 per cent, thus quite importantly reducing finishing costs by elimination of one coat with a resultant greater whiteness while definitely lowering damage potential.

Jar mills are maintained in sufficient numbers to handle a constant variety of sample enamels. An electric firing furnace is part of the equipment. This is 48″ deep, 24″ wide, 22″ high, in which ground coats are fired at 1560° to 1600° F. for 4 minutes, while the whites are fired at 1500° to 1540° F. for 2½ minutes. Electrical elements surround the firing chamber on all sides, top and bottom and are also located on the back of the furnace door. This door operates by air. The furnace is so well hooded and ventilated that, though within 10 ft. of Lloyd's desk, room temperatures are normal.

Other equipment consists of a Ro-Tap machine for checking the fineness of enamel. There is a 36″ square spray booth, exact counterpart of larger production models; a miniature pickling room for specific cleanings; and a miniature dryer for drying after dip and spray. A considerable section is given over to necessary chemicals and equipment for full production control in production pickling and enameling. Finally, there is equipment for cross-bend and other tests.

"More than a lifetime"

In ancient times, enameling was considered a rare art. It still is. Improvements made in frits and shop methods have given it luster, smoothness and durability of amazingly practical service on many products. *It lasts more than a lifetime.* Without exaggeration, this porcelain enamel finish can be said to be capable of lasting forever. To get the detail, let the reader come with me in an observation of the department, superintended by Mr. Juncker, alert general foreman, who knows porcelain enam-

eling technique in all detail. From here on, the test is almost a direct quote of his explanation as he toured the department with me.

Servel purchases frit and all chemicals necessary in milling. Frit is stored near the mill room, as are the other mill additions such as clays, bentonite, magnesium carbonate, sodium nitrite, sodium pyro-phosphate, potassium carbonate, gum tragacanth, nepheline syenite, barium sulphate, sodium aluminate, zinc oxide, titanium dioxide, feldspar, etc.

Mill room supplied with deionized water

In milling the enamel, each slip is ground to the fineness best suited for the type of ware on which it is to be used. Pebble mills consist of two 1,000 lb. capacity, two 2,000 lb., and one 300 lb. capacity.

Since water is the second largest ingredient, it is important that water used is chemically pure. Servel uses a deionizer which produces water equivalent to distilled water. Practise is to fill the mills approximately three-fourths full of porcelain balls (varying in size from one inch to three inches). Milling generally takes four or five hours.

After the enamel is ground to proper fineness, a two inch hose is attached to the unloading lid and pressure of 18 lbs. is applied into the mill. This unloads the mill into a large overhead vat. Overhead vats are drained by gravity feed into a rotospray.

After enamel leaves the rotospray, it runs through a magnetic separator and then into a storage tank ready for use.

"Control cannot be stressed too strongly . . ."

Proper control in the handling of mill additions and all mill room operations is considered extremely important by the supervision of this plant. One man on each shift does nothing but handle mill room control. He checks and double checks all weights of chemicals, whether they be grams, ounces, or pounds. He checks all dipping weights and specific gravities, and all methods of application.

Slat type conveyors are used for transporting flatware between operations.

H. L. Axford, H. P. Juncker and Sheldon Lloyd examine production samples.

Liners are blown out and given final inspection following finish coat fire.

The mill room is equipped with 5 large mills. Deionized water is used.

Control cannot be stressed too strongly in any enamel shop.

The laboratory makes fineness tests of each mill. A sample plate is fired in a laboratory furnace which is heated to the same temperature as the ones used in actual production. Samples of all cleaners, acid, nickel and neutralizer are checked in the laboratory for strength and other essential properties to insure good cleaning and pickling.

With the cooperation of Sheldon Lloyd, ceramic engineer, new and better ways in porcelain enameling are being constantly developed. Through cooperation of all departments concerned it has been possible to reconvert to peacetime production almost overnight.

Production of "liners"

Let us first consider inner liner operations. Liners are fabricated and acetylene welded in the sheet metal department and carefully metal finished. Hanging tabs are welded on each liner. The liner is then inspected for incomplete welds. High and rough welds are also a cause for rejection. These operations are necessary to insure smoothness in finish. The liners are then delivered to the pickle room, loaded into pickle baskets, and transported with an electric hoist to the cleaner tank (boiling solution of cleaner—6 oz. per gallon).

There are two cleaner tanks, each holding two basket loads of ware. The water used in these tanks has been softened by an adequate water softening system. After approximately twenty minutes in the cleaning solution the basket load is then rinsed in clear, soft, boiling water. A second rinse (soft and boiling) is then employed. The two rinse tanks are so arranged that the water from the second rinse tank overflows into the first rinse, thereby keeping the water from the second rinse tank clean and free from contamination that may be carried from the cleaner tanks into the first rinse tank.

The water is then drained off and the ware is submerged in a 6% sulphuric acid solution heated to 150° – 160° F. The ware remains in this solution twelve to fifteen minutes.

The ware is next rinsed in an overflowing tank of water at room temperature, then submerged into a nickel solution, 1¼ oz. to 1½ oz. per gallon, heated to 160° F. The pH factor is 3.5. The ware is left in this solution for four minutes. The water used to make up the nickel solution is chemically pure. All water used in this solution is run through a deionizer to insure purity.

Again the excessive amount of nickel solution is rinsed off in an overflowing tank of water, then submerged in a 0.2 to 0.4% specially prepared neutralizer. The solution is made up with soft water and kept at boiling temperature. The ware is left in this solution from two to four minutes, depending on the type of ware.

The ware is then placed on a roller type conveyor and placed in an open end drier heated by an open gas flame to 100° – 150°. After three to four minutes in this drier the ware is unloaded from the basket and again thoroughly inspected for faulty welding and cleanliness. If ware is not thoroughly clean, scale and rust free, it is rejected.

Pickle room solutions are checked hourly

All solutions and temperatures are checked each hour by the control man. His findings are recorded on a chart showing time checked, temperature and strength of each solution. This is vital to assure a perfect cleaning job.

After this careful inspection, liners are placed on a roller gravity feed conveyor and delivered to the dip tanks. There is an open air jet attached to the conveyor that blows constantly, thereby removing all dust.

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An industrial designer looks at porcelain enamel

By Gordon Obrig • PRESIDENT, GORDON OBRIG ASSOCIATES, NEW YORK CITY

Exclusive feature finish

Porcelain enamel has many uses in American life. Although its history of uses in the home has made it familiar to generations of American women, in my opinion this finish needs to be improved in order to make it familiar to the younger generation. Two suggestions for giving it more interest are:

1. The use of color hinged to the decorative schemes of today.

2. A study of possible textures to be obtained through the foundation material to which the porcelain enamel is applied.

The septic look of white porcelain is all right for a kitchen; but even there people are seeking warmer, more interesting tones. They wish to bring the kitchen into line with the increased color used in other rooms of the house. It is also true that in many homes the kitchen is no longer just a place to cook. It has developed and is used as an open annex to an eating space, and in many cases it can be viewed from the living room.

The psychological effect of proper color makes for pleasant, cheerful and warm living quarters. Any material that is used in this modern sense must find its proper place within this scheme or not be used. While it is evident that porcelain enamel manufacturers are beginning to appreciate this fact — as evidenced by the amount of color in some new products — the industrial designer would like to see much more use made of this effect.

Editor's Note:

From time to time *finish* has presented the thoughts of artists and designers as they pertain to the use of porcelain enamel. As the practical enameler reads the suggestions of these men such expressions as the following might be anticipated: "Impractical," "It can't be done," and similar expressions with the same connotation.

There are two points to be made. First of all, ideas for a great many of our enameled products originate in the mind of the industrial artist or designer. We should seek his counsel on matters pertaining to his specialized field. Secondly, if suggestions from such sources are utterly impractical from a manufacturing standpoint, it is entirely possible that it is due to the fact that our industry has not made available to all recognized designers complete data on the physical properties, design requirements and color characteristics of porcelain enamel.

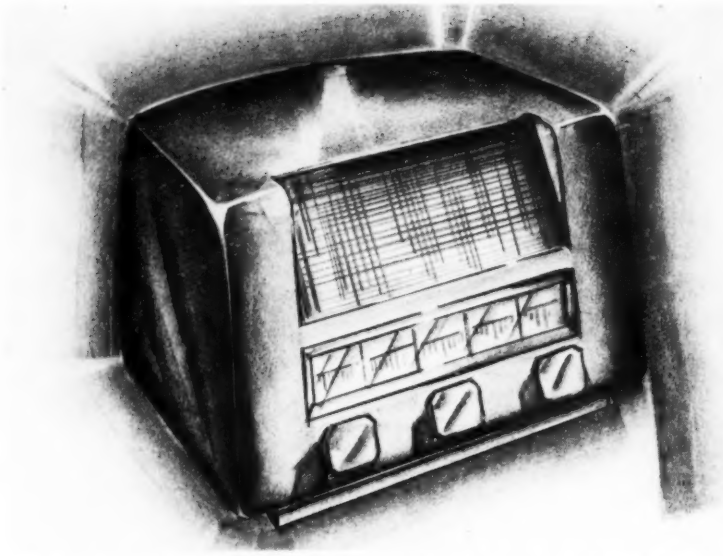
One of the greatest advantages of porcelain enamel is its ability to resist and prevent corrosion. I would like to see a development along the lines of an incomplete deposit of enamel on decorative metal; i.e., if on an aluminum top for a coffee table, it would be very effective to have a deposit of porcelain enamel in the center section. The contrast between the aluminum and the colored enamel would give designers more chances for decorative effects. Junior dining rooms, children's furniture and other types of furniture would be considerably improved with the addition of porcelain enamel and metal surfaces in their design.

One field in which we are interested is that of children's toys and furniture. Porcelain enamel used in this work would make a great deal of sense. The ability to wash dirt, grease and grime from table tops, chest tops, clock faces, etc., would make the housekeeping in children's rooms much easier. Not only that, but the sanitary aspect of porcelain enamel would be a boon in the sick rooms of grownups and children.

Coat hangers provide a world of possibilities for an enamel deposit. When one realizes that the present wooden coat hangers of a good grade carry nine coats of finish in order to make a smooth surface which will not tear garments, the use of metal enamel coat hangers seems a logical progression.

I should like to point out one thing — industrial design work is primarily the job of finding a reason for what we design. So-called "modern" is not a style but is the final end result of applying aesthetics, economics and manufacturing "know-how" to a well thought out reason for the ex-

Gordon Obrig taught Industrial Designing at Pratt Institute, Brooklyn, N.Y.; was chairman of the New York Chapter of the American Designers' Institute; and is now a member of their national board. During the war, he was consultant (in Washington) on interior material to the Federal Public Housing Authority. He had his early training in London, where he was apprentice to Charles Robrson. In the U.S. he studied modern under Paul Chalfin.



A radio with porcelain enamel finish — ideal for children's rooms.

istence and functioning of products. While America is a country of gadgeteers, the appeal of a product that works to the purpose for which it was designed has an immediate reflection in its sales volume. A reasonably priced orange juicer in porcelain enamel would have a ready market if it could squeeze orange juice easily and come apart simply.

As far as shortages of materials are concerned, from all we have been able to gather I do not think this will be straightened out for at least a year. Indications of this condition are the shortage of mirrors and the fact that there is practically no lumber except imported mahogany for the furniture industry. The condition of the finishing industry seems to be a little better for resins; butyl alcohols, etc., seem to be in better supply.

There has been too much emphasis placed on new materials. I think the time has definitely come for the designer and the manufacturer to revalue in their own minds the old and familiar materials. These have become increasingly useful and wider in their scope due to the new processes developed during the war. Most manufacturers are not in a position to throw out machinery which they now have because the designer evolves a product which would require new machinery.

Designing should be the process of developing an article which can be manufactured on existing machinery at a market price, and because of improved design (and function) an article that will show the manufacturer a higher profit on possible volume. Designers must design for a market; designers must design for a reason.

One thing I would like to see designed is a long trough for window sills which could have built into it receptacles for holding flower pots. This would eliminate the water scarred sills in many of our homes and allow more plants to be placed in a window. If an article of this type was made, styled and priced reasonably, I think it would have a market with the $5,000 income and below. After all, our largest segment of the buying public is made up of this class. Another article, and one that I should like for my children's rooms at home, is a small radio in porcelain enamel. It would look a lot better than if made of painted metal, wood or plastic.

I would also like to have a grill with a ring and mounting of porcelain enamel so that it could be wiped clean of grease and not be subject to the stains that mar metal. The possible use of porcelain enamel in the appliance field is endless. Other materials have not been doing as efficiently the things that porcelain enamel could do, but their willingness and ability to produce color, texture and contrast have made them popular because of this multitude of possibilities which they have developed and offered to the designers and manufacturer.

My associate, Robert S. Thompson, is an engineer as well as an industrial designer. He believes another technique that has unlimited possibilities is one in which porcelain enamel can be applied to aluminum castings and sheet. This opens up an entirely new field, whereby products can be light-

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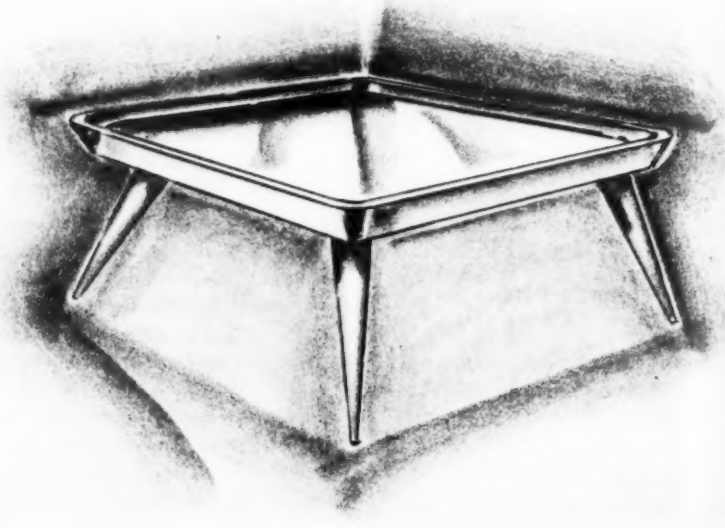
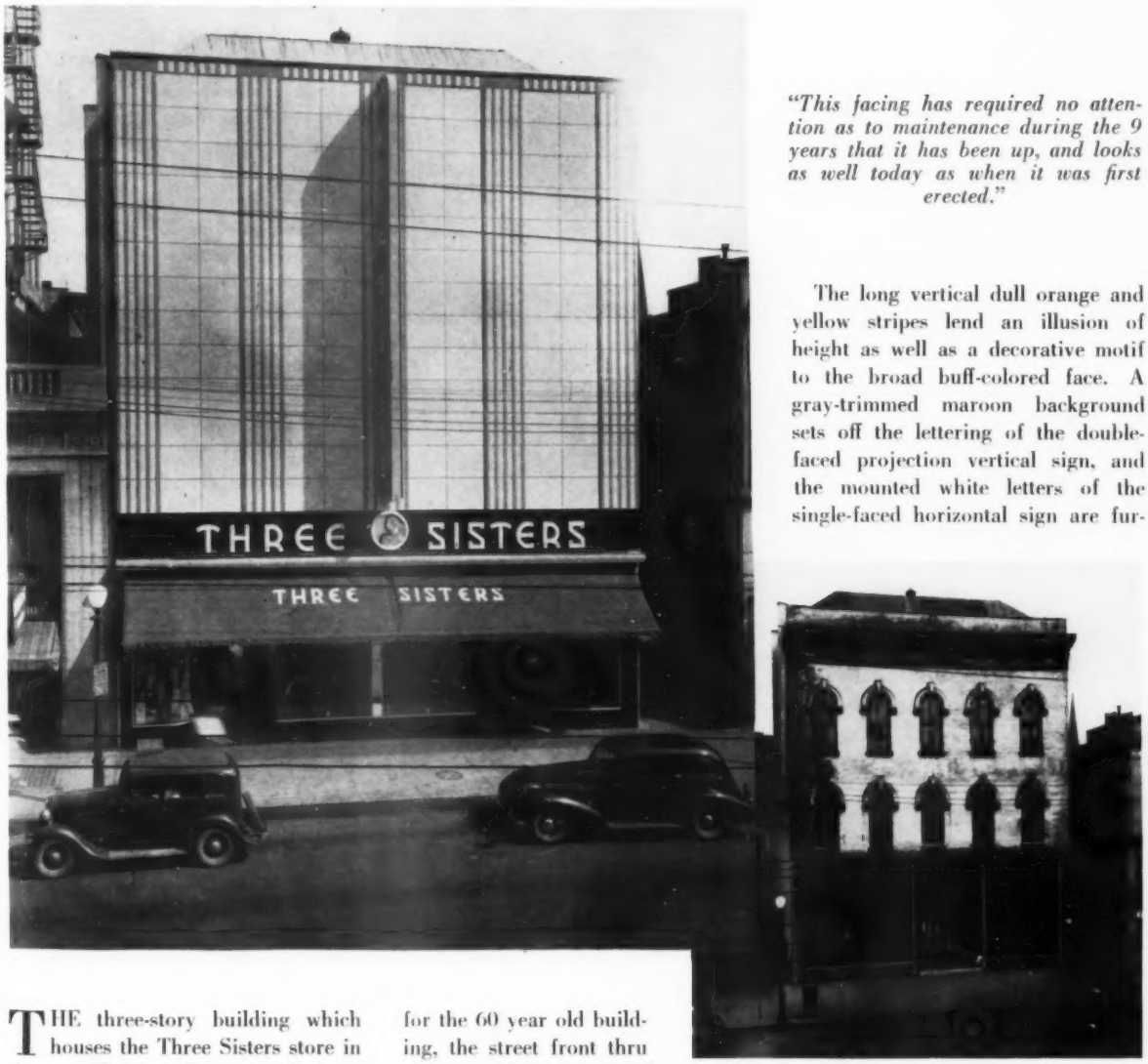
This is the type of modern coffee table where a porcelain enamel top in color could be used to advantage.



New stores from old

with architectural porcelain enamel



"This facing has required no attention as to maintenance during the 9 years that it has been up, and looks as well today as when it was first erected."

THE three-story building which houses the Three Sisters store in Aurora, Illinois, offers a good example of effective remodeling with architectural porcelain enamel. The new front was installed in 1937. The architect was I. M. Cohen; the general contractor was H. Kaplan Company; and the supplier of architectural porcelain enamel was Federal Electric Company — all of Chicago.

In referring to the installation, Architect Cohen said:

"In remodeling the premises it was impossible to get permission to remove the 2nd and 3rd floors which were not usable.

"In order to get a modern feeling for the 60 year old building, the street front thru the upper floors was faced with porcelain enamel . . .

"This facing has required no attention as to maintenance during the 9 years that it has been up, and looks as well today as when it was first erected.

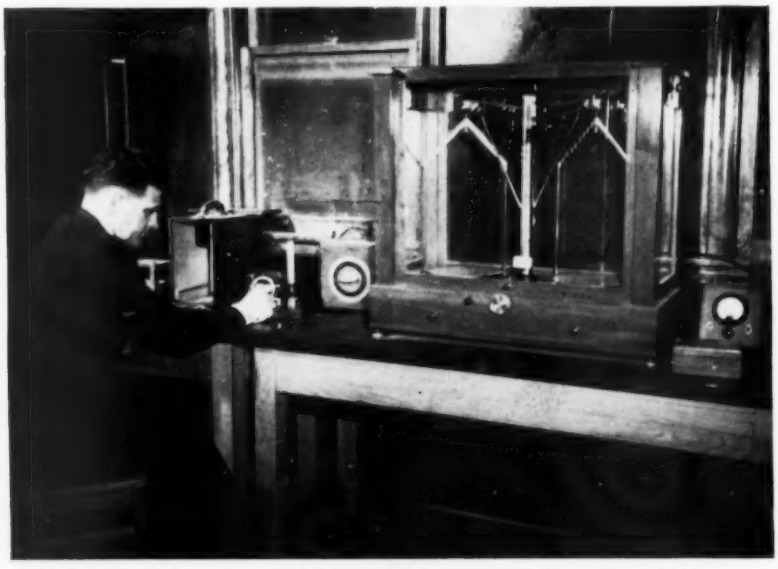
"This performance speaks well for porcelain enamel as a facing. It has my endorsement."

Anyone who has occasion to visit Aurora's Broadway can readily corroborate Architect Cohen's statement with regard to the present condition of the building. It is the outstanding installation in its vicinity.

The long vertical dull orange and yellow stripes lend an illusion of height as well as a decorative motif to the broad buff-colored face. A gray-trimmed maroon background sets off the lettering of the double-faced projection vertical sign, and the mounted white letters of the single-faced horizontal sign are further projected by a black background. At night, illumination is provided by neon tubing outlining all the letters of the sign, in addition to the general street lighting.

Mr. J. Emry, store manager, when asked about maintenance, replied, "Maintenance? Yes, I believe we did have it washed about four or five years ago." and, he added, "The front regularly receives compliments from our customers. We place emphasis on maintaining an attractive and inviting appearance — sales are not to customers walking *by* our door."

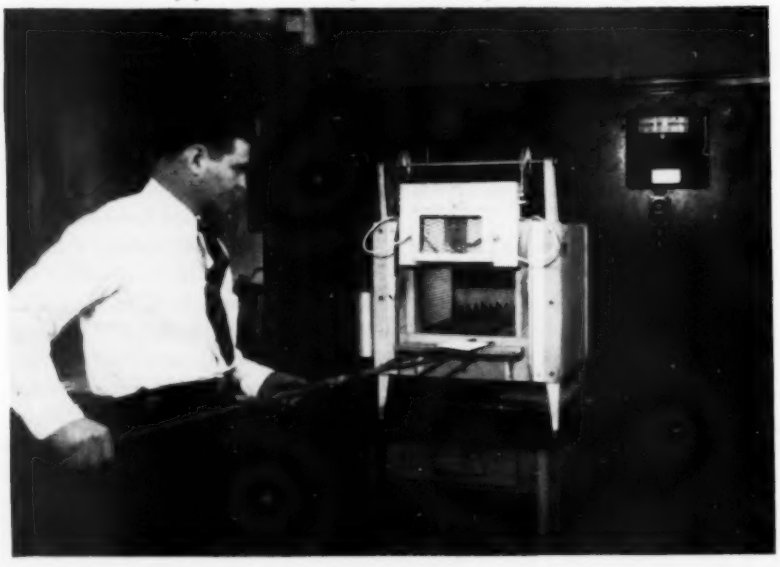
This miniature "pickle room" is important to the enamel laboratory.



Thickness gauges, a potentiometer, and an extremely accurate balance.

finishfotos

The laboratory furnace is closely controlled by an accurate pyrometer.



Control and testing abo
stove plannan

TYPICAL of the trend to greater attention to laboratory facilities for porcelain enameling plants is the recent completion of a new laboratory and the installation of equipment at Cribben and Sexton Company, Chicago. The new laboratory will afford more complete facilities for process control and for material and product testing in the company's enameling division. The new laboratory is housed within the main enameling plant, and has adequate equipment, space and personnel assigned.

A miniature pickle room

An unique pickling setup, designed and constructed by the company, occupies one corner of the laboratory. Installed in a bench at convenient work height is a battery of nine fabricated steel tanks. For normal testing work, this battery provides two cleaners, acid, nickel, two neutralizers, and three rinse tanks. The acid, acid rinse and nickel tanks are lead lined. It is planned to install suspension bars over the tanks to provide for hanging test samples.

Electric immersion heaters are used to heat the solutions. Steam and fumes are removed at the back edge of the bench through a slot in the wall with suction power provided by a motor-driven suction fan and hood installed on the roof.

Spraying of samples is accomplished in a standard 3′ x 4′ spray booth, with pressure cups used as enamel source. The equipment can be adjusted to get identical pressures, both air and fluid, to those used on the production line. The booth is equipped with a turntable, and is well illuminated with fluorescent lighting.

A new laboratory furnace with a 10″ x 14″ firing chamber has a controller pyrometer to insure accuracy in the firing of test plates. Tests show that the pyrometer will hold the furnace heat to a tolerance of 5° F. An effective hot plate and "dryer" are provided by the top burners and oven

...aboratory for a ...nameling division

of one of the company's standard apartment-size gas ranges.

Laboratory test equipment

The first equipment we see on the inspection bench is a photovolt reflectometer for checking the opacity of laboratory samples. This equipment is also used on the production line for "color matching" of white parts.

A "Magne-gage" is used almost exclusively in the laboratory for measuring enamel thickness. It is also used for calibrating the G.E. thickness gauges employed on the production line.

Standard drop test equipment is used for impact testing. A fine balance with an accuracy to within .0002 of a gram, at a 2,000 gram load, is an important addition to the new equipment. There is also a potentiometer for checking furnace control instruments.

Raw material testing

A sag test for steel is conducted in the laboratory according to the Porcelain Enamel Institute standard test. The drawing compounds used in the fabricating department are also controlled here. After compounds are checked for drawing characteristics in the fabricating department, cleaning tests are run in the laboratory pickle room and reported before the compound is used in production.

Tests for new enamels are a cooperative problem between the laboratory and production departments. A definite standard has been established for the enamels used, and no new enamels are considered unless they meet the minimum requirements thus established. There is a standard opacity curve on cover coat enamels, and new enamels must match this curve within ± 1% *within the spray weight range.*

Production plant control routine

Of prime importance to any porcelain enameling plant is the respon-

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A laboratory check on the nickel solution is made with the pH meter.

Checking cover coat samples for "opacity" with a photovolt reflectometer.

finishfotos

This corner includes a "drier," scale and sink for running fineness tests.

Combined meeting

Chicago district enamelers and A. C. S. Chicago section

THE Chicago Section of the American Ceramic Society and the Chicago District Enamelers Club met for a combined luncheon meeting on Saturday, February 23. Charles S. Pearce, associate secretary of the American Ceramic Society, Columbus, Ohio, spoke on the subject "Training for the New Ceramic Age" before the 136 members and guests in attendance. The speaker was introduced by R. P. Stevens, president of the local ACS Section.

At the speakers' table were President Stevens; J. J. Svec, secretary-treasurer of the ACS Chicago Section; the three ACS Section speakers —R. K. Hursh, G. M. Almy and W. S. Debenham; luncheon speaker, Pearce; Enamelers Club speaker, B. C. Bricker; Enamelers Club officers— W. W. Higgins, retiring president, W. J. Plankenhorn, incoming president and former vice president, and Dana Chase, retiring secretary-treasurer.

Following the combined luncheon, separate meetings were held for the two groups.

The betatron was explained to the ceramists

Professor Almy, of the Physics Department, University of Illinois, covered the principles and application of the Betatron. This subject was further amplified by Professor Hursh, of the Department of Ceramic Engineering, U. of I., who described the development of the ceramic body required in the production of the Betatron.

Mr. Debenham, research engineer of the Carnegie-Illinois Steel Corporation, gave an interesting talk on research and development in refractories.

Slides were used to illustrate each of the three presentations.

Announcement was made of a tentative meeting date of April 12 for the ACS Chicago Section. This will be the annual meeting, with election of officers.

Vitreous enamel on aluminum headlines club program

Over 100 enamelers were present to hear the paper by Mr. Bricker, E. I. du Pont de Nemours & Co., Inc., on the subject of "Vitreous Enamels on Aluminum." The paper was in the nature of a progress report on work done by du Pont technicians, both in the laboratory and in enameling plants.

Mr. Bricker explained the use of alloying elements such as copper, zinc, chrome, silica, etc., for the development of the desired characteristics in the base metal. "Alloy No. 43" was described as giving good results in both castings and forgings in the experiments of enamel application.

As in the case of other base metals, it has been determined that the aluminum surface should be free of organic materials. The cleaning operation should be as simple as possible, with no greater surface treatment than is required to assure an organic-free surface. A *thin* film of surface oxide is desirable. A treatment such as annodizing is not desirable prior to enameling.

Normal maturing temperatures for the enamels are in the range of 930° F. to 950° F.; 1050° may be satisfactory except in cases where there is an important weight factor. Firing of the finishes has been accomplished on both box and continuous furnaces, with time factors of from five to twenty minutes, depending upon the weight of the object.

Present enamels for aluminum contain lead, and are, therefore, not suggested for cooking containers. The resultant finish is considered to have good salt water resistance, reasonable resistance to alkalis and acids, and resistance to abrasion comparable to higher temperature coatings. Suggested thickness is from

Speakers' table at the February 23rd combined meeting of the A.C.S. Section and Chicago Enamelers.

.005″ to .007″, comprising .0015″ to .002″ ground coat and .004″ to .005″ cover coat.

It was indicated that design specifications would be similar with regard to radii, etc., to those for steel. Spray application is recommended but dipping can be used. Color stability is claimed for the enamels for aluminum due to lower maturing temperatures. Uniform color results have been obtained with coatings varying from ½″ to 2½″ in thickness.

It is expected that enamels for aluminum will be higher in cost than those for steel, due to a relatively higher raw material cost.

The du Pont company has not as yet released complete details in regard to development work on enamels for aluminum, and it is specifically explained that while tests indicate strong possibilities for the effective use of the material for a wide variety of products, commercial use to date has been limited to *evaluation job tests only*.

New club officers elected

Included in the Enamelers Club business meeting was a discussion of the feasibility of holding the "Maypole Party," which was an annual Club feature prior to the war. It was decided that due to the unusual circumstances surrounding the procurement of a satisfactory meeting place, prizes, entertainment and other requisites for a successful party, that it would not be held this spring and an additional regular Club meeting will be held instead.

The secretary-treasurer reported a total paid membership of 142, and gave a final report on Club finances.

The high spot of the business meeting was the election of officers for the succeeding year. Following the report of the nominating committee, the Club unanimously elected W. J. Plankenhorn, University of Illinois, as president; Paul Gerdes, A. J. Lindemann & Hoverson Co., as vice president; George Tuttle, Benjamin Electric Manufacturing Co., as secretary-treasurer; and Wayne Deringer, A. O. Smith Corporation, assistant secretary-treasurer.

The new group took office immediately, and President Plankenhorn suggested a vote of thanks to the retiring officers for their efforts in broadening the Club's effectiveness.

Training for the new ceramic age

By Charles S. Pearce

"Training—training to meet changing conditions — training to meet the pressing problems of peace — training for better living and just plain training for existence. Training, in one form or another, is a vital concern of everybody today."

The conclusions are: First, there will be a new ceramic age; that is, a long period of time, maybe several decades, maybe a hundred years, in which ceramics will play a more important part in civilization than in the last one hundred years. Second, the present industrial unrest will cease in a short period of time — maybe months — and the ceramic industry will forge ahead rapidly after that. Third, the training methods which have been developed in the past few years can be applied to industry, especially the ceramic industry. And, fourth, the ceramic industry will prosper thereby and enjoy a happier existence with mutual advantage to the owners and workers involved.

Education and training are considered separate problems in this discussion. Education is the general system of preparation for living. Courses such as are given in our colleges belong in that class, although they sometimes border on training for specific jobs.

The ceramic industry has but a short period to train new employees for the period of tremendous peacetime production ahead. For plants undergoing strikes, where in-plant training is impossible, the mails can be used effectively, utilizing all the publications and literature devoted to the field.

In smaller communities, meetings might be held in school auditoriums or other public meeting places. The fertile and as yet unexploited possibilities for training films for the porcelain enameling industry may be used.

We should give attention to the training methods devised by the nation's leading industrialists and educators for the Army, that had the greatest training task in history. Lecturing should be reduced to a minimum and actual operations—stressed with actual equipment, models and cutaways—employed. Of prime importance for effective training, also, is the small-group principle enabling an instructor to give the maximum of individual attention.

Possibilities for veteran training under the "GI Bill of Rights," in which the Government will pay the trainee the difference between his apprentice wages and journeyman's pay and provide payment for necessary tools, should not be overlooked.

Small plants can set up a training program and qualify under the act by taking the following steps: (A) The designation of one with ability and the knack of imparting information to others as head of the program; (B) Formulation of the training plan (it should take about a year to put a man through an enamel shop course); (C) Selection of training aids such as text and supplemental material; (D) Set up an indenture itemizing the pay schedule with increases and the final pay; (E) Determine the journeyman rate for your community; (F) Get the plan approved by the Veterans Administration; and (G) Hire your men and start. Employers are warned of the temptation to keep the trainee on the first job at which he makes good instead of moving him about for complete training, and are also cautioned to consult unions in appropriate cases on employee training.

"I believe that we are heading into a period of industrial peace and a period of unusual production in the ceramic industry. One that will somewhat outlast the general postwar boom, largely because of the delay

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THE SPEAKERS AND THE OFFICERS AT THE CHICAGO MEETING

Upper left: B. C. Bricker. Enamelers Club featured speaker — "Firing of the finishes has been accomplished on both box and continuous furnaces . . ."

finishfotos

Above: The Betatron and refractories were the subjects for discussion in the A.C.S. Section meeting. Principal speakers were, left to right, R. K. Hursh, W. S. Debenham, and G. M. Almy.

Above: Officers of the A.C.S. Section appear to be enjoying the luncheon. They are R. P. Stevens, Section president, and J. J. Svec, secretary-treasurer.

finishfotos

Right: Newly elected officers of the Chicago District Enamelers Club are, left to right: W. J. Plankenhorn, president; George Tuttle, secretary-treasurer; Wayne Deringer, assistant secretary-treasurer; and Paul Gerdes, vice president.

Eastern enamelers club

has big attendance at March meeting

ON Saturday, March 9, the Eastern Enamelers Club met at the Ritz Carlton Hotel in Philadelphia to hold the third meeting of the 1945-46 season. The turnout for the meeting far surpassed the expectations of the club committee, with many of the members and their guests arriving in the city Friday evening. Most of these early arrivals were on hand for the old-fashioned "enameling session" which took place at the hotel that night.

Preceding the luncheon, the Club committeemen — Herbert Turk, Fred Campbell and Jim Lardusky — issued the 1946 membership certificates, buttons and dinner tickets to the members. At 1:00 p.m. lunch was served to ninety members. Following the luncheon, members adjourned to the club room for the business meeting.

Nathan R. Klein, president of the club, opened the meeting by welcoming the new members. He then announced that Albert Kellner, of the Pemco Corporation, who was to be one of the speakers, was unable to attend the meeting due to his preparation for a trip to Europe.

The first speaker, Burton C. Bricker, E. I. du Pont de Nemours & Co., was introduced and gave his speech, "Enamels for Aluminum." *(See "Combined Meeting Chicago District Enamelers and ACS Chicago Section," this issue of Finish.)* Following his speech, Mr. Bricker passed out sample plates of enameled aluminum and answered questions which were asked by the members.

L. E. (Gene) Punderson, of L. E. Punderson & Son, Cleveland, Ohio, was the second speaker, and his speech was entitled, "Cleaning and Pickling Before Vitreous Enameling." This presentation was also followed by a discussion by the members.

A business meeting followed directly after the two speeches, and President Klein announced that the next meeting of the club would be held sometime in May. He did not disclose the city where it would be held.

Early information points to Baltimore

Mr. Klein stressed the importance of solidarity among the various enameling groups, and said that he hoped it would be possible in the near future to hold a combined meeting of the various groups.

Following these announcements, the meeting was adjourned and the members and their guests got together in the various rooms for further introduction and entertainment.

Cleaning and pickling before enameling

By L. E. PUNDERSON

My approach to this subject is through the medium of telling you how I would like to build and operate a pickle room.

Geographically, it would be located in a region where there is an abundant supply of soft water. The use of soft water in the pickle room would materially reduce my operating costs and eliminate the possibility of a lot of rejects, both in ground coat and cover coat.

Its physical location in the plant would be near outside walls where all the daylight and fresh air possible could be obtained — the light supplemented with enough artificial light to illuminate every tank and all of the surrounding floorspace, to permit the pickler to watch his tanks and the work in the pickle baskets. The tanks would be lined up in pairs:

2 Cleaner Tanks
Working Aisle
2 Hot Water Rinse
Working Aisle
1 Acid and 1 Hot Water Rinse
Working Aisle
1 Hot Water Rinse, a Nickel Tank
Working Aisle
2 Neutralizer Tanks
Working Aisle
1 Dryer

With these aisles, an operator could inspect his tanks, adjust disarranged loads or repair broken equipment without crawling along the edges of the tanks, risking his life. There would be at least six feet working space at the ends of the tanks to the walls.

These aisles would be kept free from all baskets, drums, or equipment that would impede the operator's progress. The cement floors would be pitched for drainage and would be sluiced down with water frequently — as would the tanks — to keep them free of acids and alkali. All of the control valves would be located on the operator's end of the tanks. Inlet water valves should be large enough to fill the tank in about 20 minutes, and outlet or drains should be as large as the sewer will permit, located where they will be easily accessible, particularly on acid and alkali tanks. This will save hours of time and cut operating costs.

Heated tanks will be supplied with ample heating coils and steam pressure to permit quick heating from atmospheric temperature to boiling.

There would be automatic heat control on all heated tanks, with clock-faced indicators mounted on the wall back of the operator. The roof and outside walls would be insulated, and hot air blowers so located that condensate would not form to drip down on the work or steam exist in such volume as to obscure any operation.

The cleaner would contain a minimum amount of soap to correspond with the soft water, in which there is very little calcium and magnesium to combine with the soap to form a sludge of insoluble metallic soaps. This will reduce the rinsing hazard.

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See photos . . . . . Page 26

SPEAKER-OFFICERS AND CLUB MEMBERS AT THE EASTERN MEETING

Upper left: L. E. Punderson speaks on "Cleaning and Pickling Before Vitreous Enameling."

Above: The officers confer. They are: (left to right) Fred Campbell, vice president; Nathan Klein, president; and J. L. Lardusky, secretary.

Above: Members and guests at the president's table take time out to favor the photographer.

Right: A sectional view at the Philadelphia luncheon meeting. Attendance "far surpassed the expectations." An old time "enameling session" was part of the Eastern Club's program.

Suggested layout

for a continuous furnace sanitary ware plant

By William N. Noble • ASSISTANT MANAGER, FRIT DIVISION, FERRO ENAMEL CORPORATION, CLEVELAND, OHIO

Exclusive feature

The advent of pressed steel sanitary ware and its acceptance by the plumbing ware trade has brought many enamel plant layout innovations for enameling large and complicated shapes economically and efficiently. The adaptability of this type of ware to continuous operation has given rise to many interesting possibilities for producing it with minimum cost and maximum quality.

The plant represented by the accompanying layout has been equipped with the idea of holding manual handling to a minimum, with the obvious purpose of keeping labor costs as low as possible. Further, it is designed to reduce damaged, dented and scuffed ware which might result from the size and weight of the ware being handled. In processing ware of such value in the raw shape, it is essential that this last factor be taken into consideration as scrap losses must be at absolute minimum. It is felt that a close scrutiny of the layout will show that this factor has been considered in both equipment and layout. Due to the necessary consideration of such factors in the selection of equipment, the layout represents a single purpose plant that would not be readily adaptable to other types of ware.

Raw shape storage

The plan does not show a raw shape storage area. This area is adjacent to the pickle room loading point in the press shop. The area is so located that ware can be transported from metal finish and inspection or storage to the loading point on the continuous pickle unit by means of a "laydown" roller type conveyor, so that there is always ware at the loading point for pickle lines. It is essential for economic operation of a continuous pickle unit that an adequate supply of ware, that can be expeditiously loaded, be available at all times.

Pickled ware bank

The pickled ware from the continuous pickle line is routed to either the ground coat line or to pickle ware bank area. This area is approximately 90′ x 15′ (1350 sq. ft.). The area would allow sufficient banked ware to take care of down time on the pickle machine, as well as acting as a buffer between the pickle line and ground coat line to provide storage area in the event of ground coat line being down. It is suggested that a portable gravity roller conveyor be used to move pickled ware to storage and return it to the ground coat dip and spray line, as required.

This type of set-up for storage of pickled ware allows uninterrupted production on the pickle machine or dip tank, independent of operation of the other unit.

Ground coat and first coat white bank and inspection area

This area, approximately 33′ x 56′ (approximately 1850 sq. ft.), serves as a process inspection area as well as storage for ware to be processed with final coatings. All ground coat and first coat white must be carefully inspected and defects taken care of before final coating is applied. It is to be noted that ware is taken from the furnace chain and transferred to the return cover coat spray chain for moving to inspection and storage area. The ware is inspected on the chain, and minor repairs can be made on the moving chain and the ware allowed to come around for subsequent coating, or removed for more extensive repairs or storage. Since ground coat and white coats are hung on the furnace chain indiscriminately, the cover coat spray line would not move continuously but operation would be intermittent, allowing time for inspection and repair on the line.

Brushing area

Brushing would be done on the spray line after coming from the cover coat dryer. It is necessary that brushing be accomplished in this manner due to the difficulty of removing large ware from the chain for brushing on tables. Intermittent operation of the spray line would facilitate the cooling of dried ware preparatory to brushing, as well as to aid in brushing. It will be noted that there is a blow-off booth after the brushing area so that dust may be removed from the ware prior to entering the furnace.

Mill room

The mill room is planned for mills to be located along one wall, with enough space allowed for a catwalk to aid in handling mill doors for loading and unloading. The floor in the mill room slopes toward a drain which runs under a working platform the full length of the mill room, and is covered with iron grating. This allows the easy washing of mills and the mill room floor. Although not shown, the clean-out sump is located in a spot readily accessible to cleaning and removal of the scrap enamel from the area.

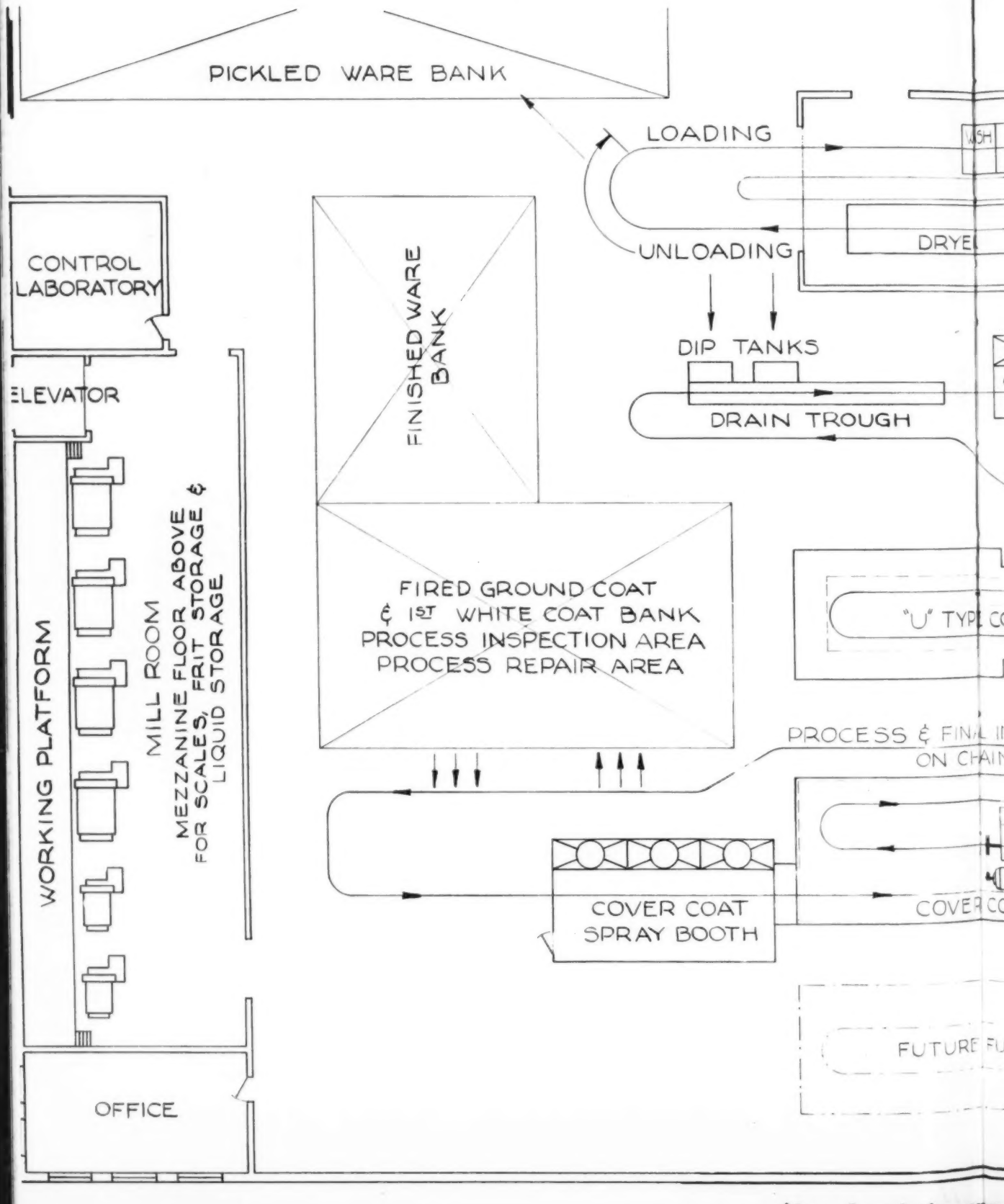
A mezzanine floor over the mill room provides for storage of frit and other enameling materials. An overhead monorail hopper on the mezzanine floor is suspended over mills for loading through charging holes in the floor. Water pipes run to mills from a central measuring unit for adding

to Page 30 →

See layout . . . Pages 28 & 29

Plant Layout No. 6 . . . . .

A single continuous furnace enameling pl



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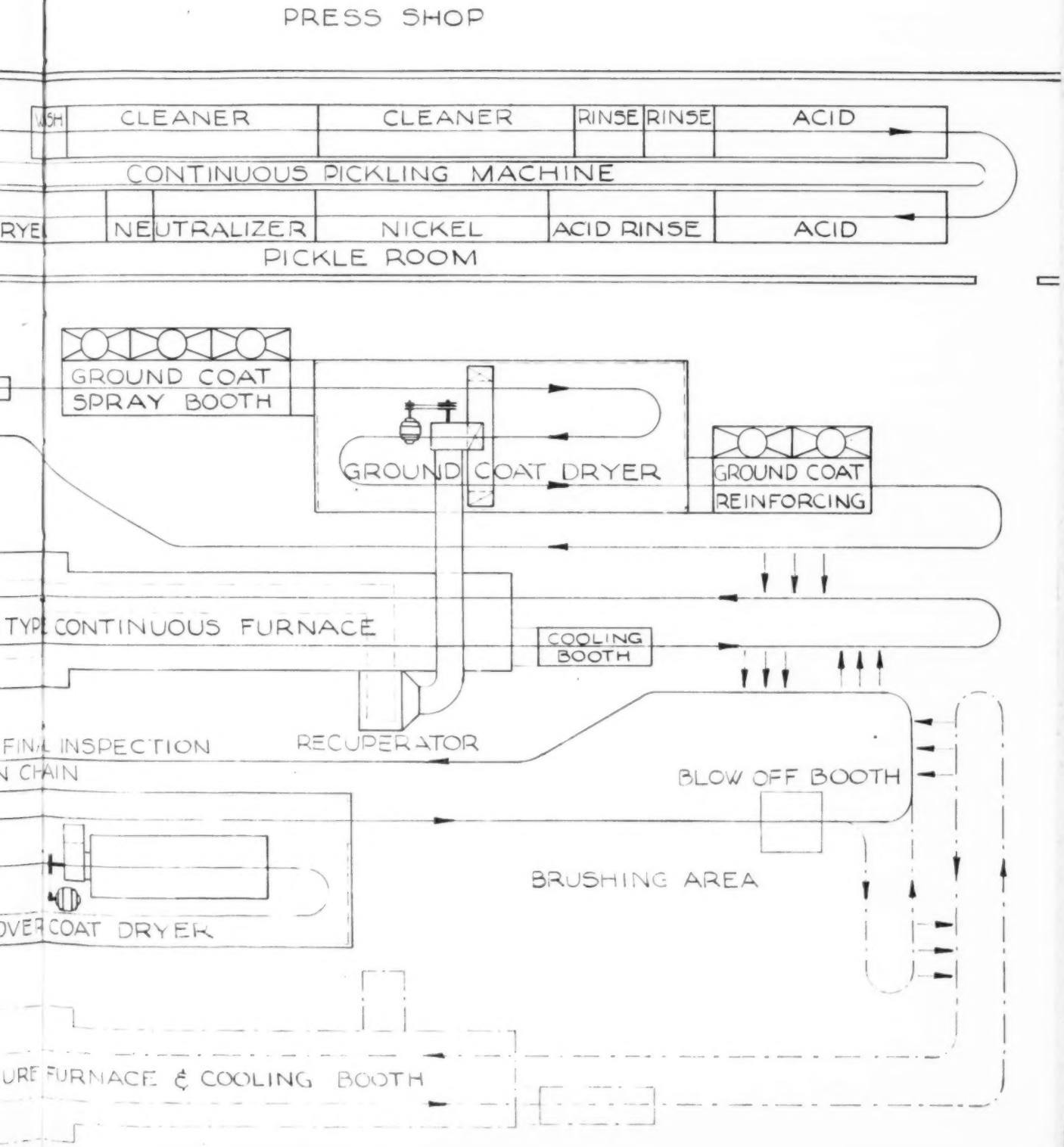
...eling plant for sanitary ware



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→ *from Page 27*

proper water content to each mill charge. The water may be measured by a water meter or from a measured tank. Liquid storage tanks for enamels are provided on the mezzanine floor for storage of milled enamels. The liquid storage tanks have automatically-timed agitators for keeping enamels uniformly in suspension. Milled enamels are taken from the mill by air pressure, flow through a coarse stationary screen, a magnetic separator and then to a pump for moving to storage tanks. The enamels are charged into spray tanks and containers by gravity flow through a centrifugal sieve and magnetic separator. There must be two complete setups for loading both storage tanks and spray tanks. One is for ground coat; the other for cover coat. It is to be noted that two tanks are provided on the storage floor for blunging and storing reclaim enamel, one each for ground coat and cover coat. An elevator is provided for moving supplies and reclaim to the storage floor.

The mill room is accessible to both ground coat and cover coat application lines, thus reducing the distance necessary to transport milled enamel.

Office and control laboratory area

Supervisory office space is provided as well as space for a control laboratory. The function of control in an operation such as this is of utmost importance to maintain successful operation, and a completely equipped laboratory is provided adjacent to the mill room and pickle room where the necessity for most of the control tests originates. The laboratory equipment required will not be covered in this article but is standard and readily available.

Finished ware bank

Finished ware from the furnace chain is placed on the return spray chain, and inspected on the chain in the inspection area. The pieces that are passed O.K. go to the finished ware bank where an overhead monorail takes ware to a packing area not shown. Ware that is rejected goes through process repair and is then re-sprayed in normal manner. This bank area is 30′ x 42′ (1260 sq. ft.), for storage and loading the monorail conveyor.

Pickle equipment

In the continuous type pickle unit, ware constantly moves through various solutions rather than moving intermittently. This is to avoid the inertia of starting and stopping a unit with such large ware being pickled; i.e., both tubs and sinks. A spray wash has been installed ahead of regular cleaner tanks to assist the cleaning operation which, on this type of ware, is often quite difficult. A nickel tank has been placed in the line as an aid to the enameling process. Pickled ware moves either directly to the ground coat chain where it is dipped or sprayed, or to pickled ware storage on a roller type conveyor. The continuous pickle unit is very satisfactory both from standpoints of operating procedure and uniformity of pickled product.

Ground coat application

Some types of sanitary ware are satisfactory for dipping and other parts require spraying, as directed by the design of parts being run. A power hoist is usually used to raise parts from the enamel dip tanks which are, of necessity, quite large and deep. Each dip tank is equipped with a circulating pump, centrifugal sieve and magnetic separator in the system. This is practically essential due to the size of dip tanks and the amount of ground coat enamel to be kept in condition.

The ground coat spray unit consists of water wash spray booths enclosed in a room kept under pressure by supplying fresh filtered air conditioned by an air make-up chamber. This type of booth eliminates the pickup of dirt-laden air from the shop and prevents passing it around wet ware and, in turn, contaminating the reclaim enamel. After dipping or spraying, the ware enters the ground coat dryer immediately.

Ground coat dryer and spray chain

The ware is hung on a monorail type conveyor and travels through the spray booth, by dip tanks, through the dryer and ground coat reinforcing booth, and then to the furnace chain. Hanging fixtures are built with a swivel arrangement to allow for coating both sides of ware that requires spraying. The dryer is heated by means of a furnace recuperator which makes use of the waste heat leaving the flues of the furnace; thus effecting a considerable saving. The heat is circulated within the dryer by means of a fan which blows hot air through ducts distributed throughout the inside of the dryer. An exhaust fan expels the moisture-laden air.

Ground coat reinforcing room

This unit is for reinforcing the dipped ware particularly, and the sprayed ware if necessary. The type of spray booth is similar to that described in the ground coat spray unit and will not be discussed here, except to call attention to the fact that it is pressurized in the same manner.

Continuous furnace

The "U" type furnace has high speed, thin section refractory muffle and can be either gas or oil fired. It is so designed that it can properly fire 16,000 lbs. per hour, including ware and tooling. The muffle height is 7′. The length of burning zone travel for the chain is 64′. This would allow the finishing of approximately 950 bathtubs or equivalent per 24 hour day, based on the premise that bathtubs are hung vertically and that both ground and cover coats are fired on the chain at same time and temperature. This estimate of the number of bathtubs produced is based on an estimated number of burns as 3.25, which is considered conservative. The hanging of bathtubs in a vertical position is a comparatively new innovation in the enameling field and allows for reduction of weight of burning tools from approximately 160 lbs. per bathtub, exclusive of weight of the tub, to 15 lbs. It is obvious that the efficiency of burning operation is increased tremendously.

The use of porcelain enamels that allow the firing of the ground coat and cover coat on the same chain is an innovation in enameling of sanitary ware. The successful hanging of

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The Washington round-up

By Wilfrid Redmond

THE new wage-price program which was announced by the White House on February 15 is under way with a steel price increase averaging $5 per ton approved by OPA March 1. This advance in steel prices is to offset the 18½ cents an hour wage increase recommended by President Truman for the steel industry.

Some 700 fabricators of steel products were told by the President recently that he had not recommended the 18½ cent increase pattern for these industries. To date* this statement has not been clarified. Whether increases greater than 18½ cents will be considered within the pattern by the Wage Stabilization Board has not yet been disclosed. Amplification of the President's statement will probably be made by the White House at an early date.

One of the first reactions to the new wage-price procedure was that employers began sounding out OPA on what price increases they might expect if they granted pay increases. OPA immediately issued a statement to the effect that no price increases would be granted in advance of wage adjustments.

Wage increases generally must be approved by the Wage Stabilization Board before price relief can be sought. However, in order to avoid delay in the final settlement of wage negotiations in strikebound plants, pre-approval has been granted to pay adjustments that do not go beyond 18½ cents an hour in the basic steel industry and in the steel processing and fabricating industries.

March 15 was announced as the date that prior approval of the Wage Stabilization Board must be obtained for wage and salary increases before price relief can be sought.

OPA announced that there is no change in the basic formula for granting price increases to reconversion industries. The formula still allows for 1941 costs, adjusted to allow for legal increases in basic wage rates and in legal materials price increases. The basic change, as explained by OPA, is that the new wage price policy permits the agency to give immediate consideration to current material cost increases and to wage increases approved by the National Wage Stabilization Board. According to the Consumer Goods Division of OPA, the present task is to recalculate the reconversion formula with relation to certain industries. The method to be followed is to bring industry surveys which resulted in earlier announcements of "increase factors" up to date. Members of each reconversion industry will be quickly contacted by OPA asking for up-to-the-minute information on approved wage increases which have been granted.

*March 11, 1946

The labor productivity question

At a meeting with 23 industry advisory committee chairmen, OPA was urged by industry members to abandon the philosophy which looks toward increased labor productivity in the production of civilian goods. After months of operation some industries, it is pointed out, are not getting more than 50 percent of prewar activity. The theory offered is that men who have been at war for four years have forgotten how to work and it is too much to expect them to produce goods in greater volume.

Industry representatives at this meeting also recommended that OPA give consideration to allowing total costs in recalculating the reconversion formula, to include such items as "fringe" wage increases, salary adjustments, and increased overhead expenses. Officially, the pricing agency made no comment upon this recommendation.

Fabricators allowed steel cost increases

Steel fabricators will be allowed to pass on their material cost increases resulting from the increases of steel products at the mill level. OPA is also getting ready to approve additional price increases to fabricators resulting from their own wage increases. Although the new wage-price directive seems to indicate that this will be the pattern followed, it is believed OPA will make exceptions and that the old cost absorption policy which the price agency has upheld in the past may continue at the distributor level.

Extension at an early date of price control and the Second War Powers Act for one year has been asked of Congress by Government reconversion agencies. These controls expire June 30. The Second War Powers Act permits CPA to control production and distribution of materials. House Committees have been urged by John W. Snyder, of the Office of War Mobilization and Reconversion, and by John D. Small, Civilian Production Administrator, to renew the controls immediately. To wait until just before the expiration dates will result in hoarding and production slowdowns in the next few months, the administrators told the House committees.

Domestic electric refrigerators

Production of refrigerators is estimated to have dropped to around 100,000 units during January as a result of industrial disputes. Work stoppages affected three major producers. Total shipments for the fourth quarter of 1945 amounted to 314,000 units. Shipments during the fourth quarter and in January have averaged about one-third of the prewar rate of 309,000 units a month.

Manufacturers of household refrigerator cabinets may apply individually for price increases that will yield each firm its own average peacetime earnings, or half the industry's average earnings, whichever is greater. If they elect the latter margin, cabinet manufacturers will take 5.41 per cent over adjusted costs. Distributors and retailers will be required to absorb substantially all the increases given the manufacturers. The action was taken in lieu of industry-wide percentage increases over 1941 selling prices, which were not given in

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"And up there" — I. N. Merritt, vice president and general manager, the Conlon Corporation, Chicago, seems to be imparting special news to Bernard J. Hank, left, president, and Roy E. Andree, director of sales. The extension doubles the factory frontage and increases production capacity by 50 per cent.

"More plant" was the first requirement in the reconversion program of The Reliance Electric & Engineering Company, Cleveland, Ohio. Located immediately alongside the company's main plant, the new building will enclose 48,000 square feet and will represent, with its machinery, equipment and moving, an expenditure of approximately $350,000.

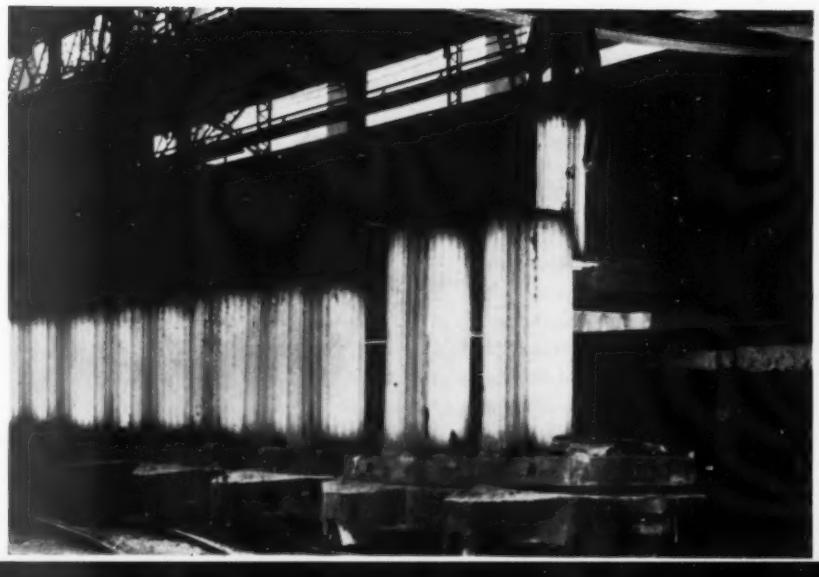
Examples of production

A ghost plant in February, 1941, a tank arsenal during World War II, and now a beehive of activity as the firm reconverts to the major home appliance field, is the history of the Chicago Plant of Pressed Steel Car Co., Inc.

Upon completion of the installation of the new continuous furnace at the Standard Enameling Division of Western Stove Co., Inc., Henry Honer, president, Western Stove Co., Walter Bauer and John Moore, superintendent and engineer, respectively, of Standard Enameling Division and R. W. Armour, Chemical Process & Engineering Co. make an inspection tour.

and plant expansion

Great progress has been made in the new plant addition at the McCray Refrigerator Company, Kendallville, Ind. The roof of solid concrete is designed with sufficient strength to support another story or two in the event greater factory area is required at any time. More refrigerated display cases will be rolling from this plant.



A row of white-hot ingots, the basic form from which most steel products are made (a welcome sight, indeed), are shown in the National Works, McKeesport, Pa., of the National Tube Company, division of U. S. Steel. The American steel industry increased production 70 per cent over 1939 in producing 467,300,000 tons of steel in the five war years.

→ *from Page 31*

this industry because profits and prices were not sufficiently similar among the firms concerned.

Electric ranges

January production of electric ranges was seriously affected by the electrical workers' strike. Production reached about half the average prewar quarterly rate in the fourth quarter of 1945. Shipments were estimated for the quarter at 70,640 units.

Domestic laundry equipment

Factors limiting production of laundry equipment include enameling stock and other steel items, tubs, electric cord sets, switches, and rubber ringers. January shipments were, of course, reduced by the steel and electrical goods strikes. Approximately 99,000 units were shipped in December, bringing the total for the quarter to 234,000 units, or about half the base period rate of 474,000 units a quarter.

Porcelain enameled products

The value of shipments of porcelain enameled products for December 1945 amounted to $3,263,803 as compared with $4,012,810 for November 1945. Shipments of cooking, household, and hospital utensils accounted for $1,554,484 of the total for December. Shipments of products for December were as follows:

		No. of firms reporting
Signs	$ 162,868	26
Stove parts	513,535	28
Refrigerator parts (household and commercial)	195,442	14
Reflectors, including fluorescent	322,773	10
Cooking, household, and hospital utensils	1,554,484	18
Table tops (kitchen cabinets, dinette sets)	59,918	7
Store fronts and other architectural porcelain parts (exterior and interior)	23,041	7
All other	432,742	36

The value of total shipments for 1945 was $39,402,694. Annual shipments for 1939 were $37,765,624.

Bathtubs

Production of over 125,000 cast iron tubs in the first quarter of 1946 is considered possible. Facilities are adequate to produce 10,000 steel tubs. To meet the necessities of the housing program in 1946 and 1947, production of bathtubs must treble the December rate of about 40,000 tubs. In addition to a continued flow of pig iron and scrap iron, and sheet steel in the case of steel tubs, there are equipment and price problems to be worked out. CPA is examining some of these bottlenecks and states appropriate steps will be taken promptly to remove them.

Sinks and lavatories

Current production of lavatories and water closets compares favorably with that of 1939, but the output of sinks is considerably lower. Production of all three, it is pointed out by CPA, will have to increase substantially above producers' estimates for first quarter 1946 if requirements for 1946 are to be met.

The House voted down the subsidy provisions of the Administration's Housing Bill. The measure asked for $600,000,000 to aid in the production of short materials for the housing program. The Senate will be urged to restore the provision.

Lead shortage serious

Industry is faced with a 200,000 ton lead deficit in 1946, CPA pointed out in a recent report. The agency outlined a proposed program to bring supply and demand into closer balance. The program will continue controls under Order M-38; maintain import controls; will intensify efforts to prevent accumulations; return lead and lead scrap from overseas; extend controls on export of lead. In addition it is probable that even stricter measures will be necessary such as the issuance of permits for the purchase of lead, as has been done in the past year for antimony.

"THIS IS A MASQUERADE, DEAR. GO AS YOU ARE."

NEWS

Glen Grogan at Ingersoll

Glen Grogan is now with Ingersoll Steel Division, Borg-Warner Corp., where he is in charge of the control department in the company's porcelain enameling plant.

A graduate of the University of Illinois, Glen was for three years in a kitchenware plant on control, development and supervision work. From 1929 to 1934 he was with Vitro Manufacturing Company, and from '34 to '44 with du Pont. Prior to joining the Ingersoll organization he was with Benjamin Electric Manufacturing Company.

M&T men instructing at Rutgers

It was reported that R. R. Danielson, director of ceramic service, and George C. Betz, sales manager of the chemical division, of Metal & Thermit Corporation, are instructing the class in "Ceramic Bodies and Glazes" in a series of evening courses at Rutgers University, New Brunswick, N.J.

Mr. Betz' assignment covers ceramic bodies, while glazes and enamels will be under Mr. Danielson's instruction.

New advertising program for porcelain enameled hospital ware

The Enameled Utensil Manufacturers Council is conducting a nationwide advertising campaign for porcelain enameled hospital utensils directed to the hospital buyer through trade publications.

The campaign will break with full page spreads in the April issues of "Modern Hospital," "A.S.T.A. Journal," and "Drug Topics." Beginning in May, full page ads will appear in "Hospital Progress" and "R.N.A. Journal for Nurses." Advertisements are scheduled to appear every other month in these publications through the first quarter of 1947.

The Enameled Utensil Manufacturers Council has set up a comprehensive advertising program for the promotion of porcelain enameled utensils through both trade and women's magazines during the coming year.

Ferro Enamel dealing for Chicago firm

Following a Directors' meeting, held on February 20, Robert A. Weaver, president, Ferro Enamel Corporation, Cleveland, announced that Directors have authorized, subject to shareholders' approval, an issue of 25,000 shares of Ferro stock to be exchanged for common stock of Tuttle & Kift, Inc., Chicago, Illinois.

The Chicago firm designs and manufactures electric heating units, switches and gas-range valves. The company would become a wholly-owned subsidiary of Ferro Enamel Corporation.

It was reported that negotiations are under way with the shareholders of Tuttle & Kift; and that the plan will be submitted to shareholders of Ferro at the annual meeting to be held in April, 1946.

Directors of the Moore Corporation, Joliet, Illinois, manufacturer of stoves, heaters and furnaces, have voted a dividend payment March 15 of $1.50 on the preferred stock, to shareholders of record February 20. Control of the Moore Corporation was bought in December, 1945, by the Conlon Corporation, Chicago, maker of household washers and ironers. The last preceding dividend paid by Moore on its preferred was $1 in 1941.

Cribben & Sexton announces new executive vice president

George D. Wilkinson, president and chairman of the Board of Cribben and Sexton Company, Chicago, announces the appointment of Wm. M. Hillborn as executive vice president and director, effective April 1.

Mr. Hillborn was formerly mail order operating manager of Sears, Roebuck and Co.

P. E. I. Executive Committee meets

The Executive Committee of the Porcelain Enamel Institute met at the Hotel Belvidere, Baltimore, on March 1. Those present were: R. H. Turk, president; H. R. Spencer and W. A. Barrows, vice presidents; Wm. Hogenson, treasurer; P. B. McBride, past president; and Edward Mackasek, secretary.

Steel industry to spend for new facilities

Steel companies plan to spend a record $327,000,000 this year for facilities and equipment to fill the ever-increasing demands, according to a recent report by the American Iron and Steel Institute.

These expenditures would exceed by 10% the peak reached in any war year, and are more than double the expenditures in 1945. It is said that most of the millions will go for new and improved rolling mills and finishing facilities.

Roper official honored by War Department

L. R. Jensen, general superintendent of the Geo. D. Roper Corporation, has been awarded a War Department Certificate of Appreciation for his work on the Industrial Inte-

gration Committee in charge of wartime development and production of ammunition.

Bendix announces purchasing department appointments

Henry A. Jewell, new P.A.

Appointed recently to positions in the purchasing department at Bendix Home Appliances were M. R. Denison, promoted from purchasing agent to director of purchases (see *finish*, February, '46); Henry A. Jewell, selected as purchasing agent; and L. F. "Larry" Kedzie, promoted from buyer to assistant purchasing agent.

In 26½ years of industrial executive experience, Mr. Jewell, the new purchasing agent, has served with the Norge Machine Production Division, the Kelvinator Corporation, and the Timken Detroit Axle Company.

Frigidaire launches new sales training program

The Frigidaire Division, General Motors Corporation, launched the most extensive sales management training program in its history on March 4th when the first ten-day training schools for more than 300 key district personnel got under way in Dayton.

Seventy-five appliance sales managers and district representatives of the 44 Frigidaire distributing organizations throughout the country, together with factory sales department people, were in attendance to be thoroughly familiarized with all phases of organization, products, advertising, sales promotion, publicity, sales, distribution and service as these subjects pertain to the district and dealer organizations. Succeeding schools will be attended by district commercial sales managers, sales promotion managers, district representatives, and other key sales people, the company reports.

Margaret Davidson heads new Hotpoint Institute

To insure selling practices that instruct consumers in the "use values" of the new post war electric appliances, Edison General Electric Appliance Co. has formed Hotpoint Institute, "a home economics activity aimed at consumer education and training in appliance uses for retailers' sales personnel."

The home equipment industry has outgrown the "home economics testing kitchen, and store demonstration technique," and must be broadened to provide many new services, said Ward R. Schafer, vice president in charge of sales.

The full scope of the new institute will include cooperation with women's page editors, with magazines, assistance to electric service company home service departments, and testing for product design and development.

Margaret Davidson, director of home economics, (See "The Spotlight Turns on Kitchens," March, 1945, *finish*) has been named to head the Institute. A present staff of eight home economists is handling the testing, planning and training assignments.

Another modern house featured in "McCalls"

Easy to live, easy to care for and easy to look at are three of the virtues described by Mary Davis Gillies, Architectural and Interiors Editor, in the March issue of "McCall's Magazine." The house designed by C. C. Briggs consists of kitchen, laundry, heater room and bathrooms, concentrated in one section of the house to eliminate costly plumbing lines; a combination living-dining room, two bedrooms, and a third room next to the living room that can be used as a bedroom, guest room, game room, study, hobby room, or as an extension of the living room. Either standing walls or folding partitions could separate it from the living room.

"Calling cab no. 2458"

Philco Corporation plans to produce and sell a complete line of mobile radio-telephone equipment to provide dial telephone service in automobiles, trucks, buses and taxicabs as well as in police and fire equipment.

Texas enameling plant expands facilities

finishfoto

One of the enamelers in attendance at the recent meeting of the National Electric Sign Association at the Edgewater Beach Hotel in Chicago was J. B. McMath of the newly formed McMath-Axilrod Corporation of Dallas, Texas. (See February *finish.*)

From Mr. McMath we learned that in the expansion of their plant facilities they are planning to place special emphasis on their activity in the sign and architectural porcelain enamel fields. The company has two box type furnaces and is, at present, constructing a new building to add to their fabricating plant. Their specialty is neon sign faces for sign builders, and they will build and install completely porcelain enameled spectaculars.

Architectural porcelain services will include engineering, design and installation. This work is to be under

here's news

ABOUT

A BETTER BLACK OXIDE

Now everyone can have it—Ferro's new, concentrated F-1335 Black Oxide. Heretofore limited in quantity, due to restrictions on important ingredients, Ferro's new Black Oxide is now available to all, for porcelain enameled products. In fact, Ferro has also recently expanded its production facilities to accommodate the increased demands for this and other high-quality Ferro Colors.

Tested and proved in shops all over the country, this easy-to-work Black Oxide meets high physical tests and is exceptionally trouble-free from blistering and ground coat defects. Users claim it to be superior to, and more economical than, any similar product they have used.

Try this new and better Black Oxide in *your* shop. Write today!

FERRO ENAMEL CORPORATION

COLOR DIVISION

4150 EAST 56th STREET • CLEVELAND 5, OHIO

the direction of Walter Gray, formerly of Texlite Corporation.

Mr. McMath is president of the company, and Mr. Axilrod is vice president. The company's plant is now in operation and it is expected that expansion plans will be completed in about sixty days.

In referring to future possibilities for porcelain enamel in the Texas territory, Mr. McMath said: "Possibilities for both signs and architectural porcelain are very great in our territory when, as and if materials can be made available."

Cliff Knight completes 20 years with McCray

V. Clifford Knight, chief engineer and factory manager of McCray Refrigerator, Kendallville, Ind., was feted with others at the annual banquet of the McCray Twenty-Year Club. Club President John W. Hart presented Cliff with the coveted 20-year emblem — and a small model airplane. Cliff is a civilian pilot and a CAP commanding officer.

A total of more than 3200 years of service are represented in the 94 members of the McCray Twenty-Year Club.

International Lighting Exposition conference program

A full parade of "What's New in Lighting" plus a conference program studded with many of the lighting industry's outstanding authorities on engineering, contracting, installation, merchandising and selling is assured visitors to the International Lighting Exposition April 25-30 at the Stevens Hotel.

With the announcement of a complete sellout of Exposition space, assuring visitors of a complete viewing of What's New in Lighting, as portrayed by some 70 producers of commercial and industrial lighting equipment, lamps and allied products, also comes the announcement by Rudolph W. Staud, Benjamin Electric Mfg. Co., program chairman, of the complete program of subjects and speakers for the conference sessions. These conferences are to be held the mornings of Friday, Saturday, Monday and Tuesday, April 26, 27, 29 and 30. The exposition will be open 12 noon to 6:00 p.m. Friday, Saturday, Sunday, Monday and Tuesday, April 26-30.

The program, as released by the committee, follows:

Forum on Lighting — Friday, April 26, 1946 — 9:30 a.m. to 12:30 p.m.

S. B. Williams, editor of "Electrical World"; Ward Harrison, director, Engineering Division, General Electric Company, Cleveland; and Samuel G. Hibben, director of applied lighting, Westinghouse Electric Corp., Bloomfield, will be the speakers.

Lighting Sales Forum — Saturday, April 27, 1946 — 9:30 a.m. to 12:30 p.m.

Scheduled speakers are: W. H. Robinson, Jr., manager, Advertising Division, Lamp Department, General Electric Company, Cleveland; Harris Reinhardt, manager, Commercial En-

The over-center snap action mechanism, an exclusive Robertshaw feature, is actuated by the expansion and contraction of liquid in the hydraulic assembly. The movement of the diaphragm thus created is concentrated on a snap-lever and becomes greatly magnified. Consequently, the control is very sensitive and responds quickly and accurately to maintain very close differentials. Sturdy and dependable, Robertshaw thermostatic electric controls are used widely by leading manufacturers of electric cooking and heating equipment.

MODEL D1

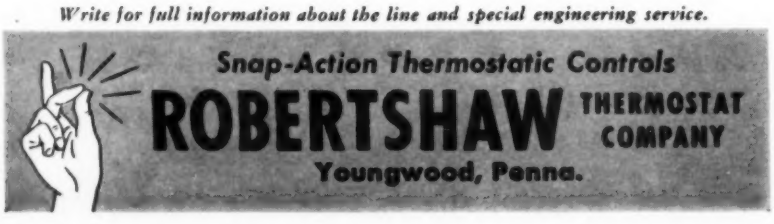
General purpose, double pole, single throw control. No separate "off" switch needed. Capable of standing loads of 6000 watts, 250 volts.

MODEL C1

With automatic selector switch. Designed to control 2 elements either individually or simultaneously.

Robertshaw models include thermostats for dressing sterilizers, autoclaves, incubators, electric and oil ranges, ovens, water heaters, laundry machines, deep-fat fryers, coffee urns, food carriers, chicken brooders and many other uses.

Write for full information about the line and special engineering service.



gineering Dept., Sylvania Electric Products, Inc., Salem, Mass.; and S. C. Sachs, S. C. Sachs Company, St. Louis.

Lighting Industry Round Table—Monday, April 29, 1946 — 9:30 a.m. to 12:30 p.m.

Participants in the round table discussion will be: S. R. Naysmith, chairman, Industrial and Commercial Lighting Equipment Section, National Electrical Manufacturers Association; F. M. Spaugh, chairman, Floodlighting Section, N.E.M.A.; A. F. Dickerson, chairman, Street and Traffic Safety Lighting Bureau, N.E.M.A.; A. F. Wakefield, president, Illuminating Engineering Society; Henry Steinmetz, chairman, Better Light Better Sight Bureau; J. S. Schuchert, chairman, Sales Personnel Committee, Edison Elec. Institute; G. B. Roscoe, Director of Public Relations, National Electrical Contractors Association; C. G. Pyle, managing director, National Electrical Wholesalers Association; Harold H. Green, Advertising Division, Lamp Dept., General Electric Company, Cleveland; D. W. Atwater, manager, Commercial Engineering Dept., Westinghouse Electric Corp., Bloomfield; and Garlan Morse, Lamp Merchandise Manager, Sylvania Electric Products, Inc., Salem, Mass.

Forum on Lighting Service — Tuesday, April 30, 1946 — 9:30 a.m. to 12:30 p.m.

Subjects covering lighting service and lighting application will be discussed by I. L. Illing, assistant sales manager, Wisconsin Electric Power Co., Milwaukee; H. A. Stroud, sales promotion manager, Monongahela Power Co.; R. W. Butts, lighting director, The Ohio Public Service Co., Elyria; A. A. Brainerd, illuminating engineer, Philadelphia Electric Co., Philadelphia; James J. Oberhausen, illuminating engineer, Commonwealth Edison Co., Chicago; H. P. Steele, vice president, Benjamin Electric Mfg. Co., Des Plaines, Ill.; W. P. Lowell, Jr., chief engineer, Lighting Fixture Djv., Sylvania Electric Products, Inc., Ipswich, Mass.; Marshall N. Waterman, Electrical Testing Laboratories, Inc., New York; and B. J. Jensen, assistant general lighting representative, Public Service Electric and Gas Co., Newark, N.J.

Highlight of the social program will be the Annual President's Night and Electrical Industry Dinner, Chicago Section, Illuminating Engineering Society, at the Stevens Hotel on Monday evening.

Ten thousand attendance is expected, according to the committee. Further information and copies of program may be obtained by writing A. B. Coffman, exposition manager, 111 W. Jackson Boulevard, Chicago, Illinois. Tickets which are available to all persons in the Lighting Field and to all industrial, commercial executives and others concerned with the use and purchase of lighting, may be obtained from any of the manufacturers exhibiting at the exposition.

English homes will have American kitchens

England's intense need for new housing and remodeling old and war-damaged dwellings has gained world-wide interest. Myer Benjamin of the British Isles is shown here conferring on kitchen merchandising with Frank Knecht, sales manager, and George E. Whitlock, president of Mullins Manufacturing Corporation, Warren, Ohio, manufacturers of Youngstown Kitchens.

Pemco adds to customer service staff

Pemco Corporation of Baltimore has just announced two additions to their customer service staff. They are: William (Bill) Gladden who will cover the Midwest Territory and Harold J. Giraud who will cover the West Coast.

Bill Gladden, up to the war, had about 23 years of service with Pemco. When last with the company he was field engineer in the Service Dept.

Harold Giraud has just been released from the Army. Entering the service in March of '41, he was sent overseas to the South Pacific area and as Master Sergeant saw service in Australia, New Guinea, Leyte and Luzon. Previous to his entry into the service he was associated with the Ed. Friedrich Manufacturing Co. of San Antonio, Texas, where his work covered all phases of production with emphasis on mill room work, color matching and control.

To head sales for Nesco national accounts division

Announcement has been made by M. N. Brady, vice president in charge of sales for National Enameling and Stamping Company, Milwaukee, Wisconsin, of the appointment of W. L. Hacker as sales manager, National Accounts Division. His office will be located in the sales rooms of the Nesco Company located at 1462 Merchandise Mart, Chicago.

After attending Northwestern University, Mr. Hacker joined Butler

ALWAYS IN HARMONY . . .

OUR JOB has always been to provide colors that "sing" when applied to porcelain enamel products of all kinds. Once we know your production methods and the frits you use, Drakenfeld technologists go to work, creating new colors and re-creating old ones that are in perfect harmony with the requirements you establish — colors of top uniformity and dependable color strength.

Mutual confidence and cooperation are the bases of our success in this important work, for the service we give on porcelain enamel colors is the outgrowth of many years of close relationships with economy-minded porcelain enamel manufacturers.

You are invited to share in our technical skill and our broad knowledge of porcelain enamel colors for signs, architectural and industrial purposes, and for home, institution and professional utensils and appliances. We believe you will find our service can help save time, reduce rejects, and increase profits. Give us the details of your color problem and let us work out the answer. Write today.

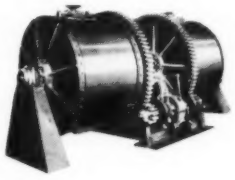
DEPENDABLE SERVICE ON: Screening Paste . . . Graining Colors . . . Squeegee Oils and Mediums . . . Spraying and Banding Mediums . . . Chemicals . . . Rotospray Sifters . . . Porcelain Grinding Balls . . . Porcelain Mill Linings . . . Steveco Mills.

If It Flows ROTOSPRAY Can Strain It!

Saves time and labor. Strains through a vertical screen — no clogging. Long-life screen often saves enough to pay for the equipment. Standard and Junior sizes. May be suspended or placed on floor. Capacity ranges from 300 to 1000 gallons per hour, depending on the nature and specific gravity of the product, screen mesh and size of sifter. Descriptive folder sent on request.

5 SAVINGS WITH STEVECO MILLS

Time
Labor
Horsepower
Floor Space
Initial Costs



Steveco high-efficiency duplex mills wet-grind porcelain enamel materials better, faster, and at low cost. Many outstanding construction features proved in hard day-after-day service in many plants. Wide range of sizes and linings, with all types of drives. Write for catalog, then let us study your grinding needs and recommend the correct type for your requirements.

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Brothers where he was successively salesman, Detroit district sales manager, and Chicago city sales manager.

George M. Douma

Simultaneously, Mr. Brady announced the appointment of George M. Douma as district sales manager for the eleven Western States with offices in the Western Merchandise Mart, San Francisco.

Mr. Douma is being promoted to the West Coast position from the Chicago office where he served as sales manager of national accounts. Prior to joining Nesco, he had ten years background as district sales manager for Butler Brothers, Chicago, and more recently as Central West territory sales manager for Wilson Brothers of Chicago.

Hoenigmann to Florence Stove

At the annual meeting of the Florence Stove Company, F. J. Hoenigmann was elected Executive Vice President and Director. He will be in charge of operations of Florence Stove Co., with factories in Gardner, Mass., Kankakee, Ill., and Lewisburg, Tenn.

Mr. Hoenigmann brings to his new position a wide experience in the gas range field. He has been executive vice president and general manager of the Cribben and Sexton Company of Chicago for six years and had formerly been sales manager of the company for ten years. He is chairman of the Gas Range Division of the American Gas Association and is also a director of the Gas Appliance Manufacturers Association.

R. L. Fowler was re-elected President and Chairman of the Board. H. O. Berry, manager of the Gardner factory, was elected a Vice President, and Vice President W. T. MacKay, head of the Kankakee plant, was made a Director. Other officers re-elected were: Vice Presidents, H. H. Morse and G. B. Colburn; Treasurer and Secretary, A. E. Luke; Assistant Treasurer, B. O. Ashworth.

Priest heads railroad research bureau

Appointment of H. Malcolm Priest as manager of the railroad research bureau, United States Steel Corporation Subsidiaries, has been announced by presidents of the four subsidiary companies serviced by the bureau. These include Carnegie-Illinois Steel Corporation, Columbia Steel Company, National Tube Company and Tennessee Coal, Iron and Railroad Company.

New McCray Superintendent

finishfoto

The McCray Refrigerator Co., Kendallville, Ind., announced the promotion of I. A. Rollins to factory superintendent. Ira, or "Ick", is a civil engineering graduate of Tri-State College and a veteran of 14 years service with the McCray organization. He has had experience in every department of the plant and has been in charge of production control for the past six years. He has been active in the McCray Foremen's Club and served for one year as its first secretary. At present he is also an alternate director of the National Association of Foremen.

Smith to head new Ferro Detroit office

The Ferro Enamel Corporation, Cleveland, Ohio, manufacturers of porcelain enamel finishes and designers of porcelain enameling equipment, announces the opening of a Detroit, Michigan, office to serve its customers in that territory.

The new Ferro office is located in the Ford Building and is in charge of Sylvester N. Smith, recently appointed Detroit district manager for the company. Prior to the war, Mr. Smith was a representative for the company in the Chicago district.

This is the third new district office to be opened by Ferro since the cessation of World War II. The first new office was opened in New York City, with W. H. Wilson in charge; a second at St. Louis, with J. A. Thompson in charge. Other expansion includes the building of a new branch factory at Los Angeles, California, and plans for the erection of a new plant in Mexico.

Ingersoll Steel division producing Bendix washers

The first Bendix washing machine came off the line at the Ingersoll Steel division plant in Chicago March 15 to start large-scale production of washing machine equipment. Roy C. Ingersoll, president of the company, announced.

Production is scheduled to reach a minimum of 375,000 units per year

and is to provide employment for an additional 500 persons for the next several years, according to the Ingersoll announcement.

Bituminous coal industry to extend research activity

Directors of Bituminous Coal Research, Inc., national research agency for the bituminous coal industry, approved a current budget that calls for investing $401,000 in more than 40 research projects intended to improve utilization of solid fuels by railroads, industry and domestic consumers.

More than one-half of the current BCR budget covers projects under way and to be started this year at Battelle Memorial Institute, Columbus, Ohio. The BCR directors reported that 26 projects had been allocated to Battelle, including fully automatic stokers, smokeless stoves, furnaces, ranges and water heaters, group heating, and chimney design and construction, all in the residential field.

CHEMICAL "DEPARTMENT STORE" TO INDUSTRY

NICKEL SULPHATE

Available from stock . . . Also complete line of chemicals for CERAMIC and PLATING INDUSTRIES.

Write, Wire, or Phone **CHerry 0296!**

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Distributors for American Potash & Chemical Corp. (Borax and Boric Acid); Darling & Co. (Oleic and Stearic Acids); Duquesne Smelting Corp. (Nonferrous Metals, Zinc Dust); Ferro Drier and Chemical Co. (Driers and Metallic Soaps); Lindsay Light & Chemical Co.; Merck & Co. (Laboratory Reagent Chemicals); Philadelphia Quartz Co. (Silicates); Stauffer Chemical Co. (Sulphur); Tennessee Corp.; Virginia-Carolina Chemical Co.; Wyandotte Chemicals Corp.; and others.

Enamelers and the Eiffel Tower

This photograph shows Maurice Delangre, manager of Société Anonyme pour L'exploitation des Precédés Ferro (Ferro French Associate), and Lt. Charles W. Foster, U. S. Army, formerly of Ferro Enamel Corporation's International Division, Cleveland, Ohio. The Eiffel Tower visible in the background designates the locale of the photograph.

Visitor from India

finishfoto

A recent visitor at the offices of *finish* was R. N. Agashe, formerly proprietor of C. P. Enamels, Nagpur, Central Provinces, India. After run-

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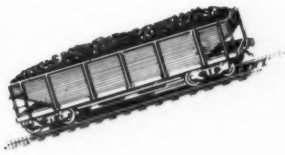
FROM STOVE PIPES TO COAL CARS



KAYKOTED metal products are preserved from rust economically whether they weigh one pound or ten tons or more.

Some of the products which will benefit by being KAYKOTED are:

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Cement Building Blocks
Metal Roofing Shingles
Radio Parts Chests
Transformer Cases
Ammunition Boxes
Aircraft Heaters
Steel Coal Cars
Metal Siding
Gas Heaters
Pipe Lines
Manifolds
Ash Cans
Pottery
Stoves
Tile

- **ECONOMICAL**
- **DURABLE**
- **INORGANIC**

We invite metal products manufacturers to submit articles to our laboratory to be KAYKOTED and returned to them with a complete report. Laboratory samples should not be larger than 12"x12"x48".

Spray it...
PROTECTION AGAINST CORROSION
KAYKOTE
LOW TEMPERATURE CERAMIC COATING
Dip it...

KAYKOTE DIVISION, KRAUS RESEARCH LABORATORIES, SPARKS, MD.

West Coast Distributor . . . INDUSTRIAL COATINGS COMPANY • 381 West Maple • Glendale 4, California

DAY AFTER DAY AFTER DAY
NO REJECTS
2
TUESDAY
NO REJECTS
3
WEDNESDAY
NO REJECTS
4
THURSDAY
NO REJECTS
5
FRIDAY

the same uniformity

Day, after day, after day, the performance of Pemco products follows a definite pattern that is not the result of happenchance. Day, after day, after day, the uniform performance of Pemco Frit . . . . Pemco Colors . . . . Pemco Clays, is the result of Pemco engineering ingenuity . . . . . of production control . . . . of laboratory research.

The Continuous Smelters (exclusive with Pemco) bring "perfection" to the production of Pemco Frit . . . . . the "famous 16" Basic Colors are the result of years and years of experimentation and experience . . . . . the Micronized Clays are another exclusive Pemco contribution. Each collaborates in producing the UNIFORM PERFORMANCE that has become synonomous with the name PEMCO . . . . . in the field of porcelain enameling . . . day, after day, after day. Your problems of profit become less difficult when this quality performance is synchronized with your plant procedure day, after day, after day.

May we have the pleasure of demonstrating this fact . . . by actual plant operation . . . your plant? Any day!

PEMCO CORPORATION

BALTIMORE MARYLAND

"ALWAYS BEGIN WITH A GOOD FINISH"

Cleaning and pickling before enameling

(Continued from Page 25)

However, to make doubly certain of a clean solution, a filter will be installed which will cleanse the cleaner solution of oil, grease and dirt while it is in operation.

The cleaner in No. 1 tank will be formulated so as to clean such grease and oil as can be expected to be found on the greater part of the steel. Its strength will be adjusted so as to clean 100% of the work in one-half of the total allotted cleaning time. The cleaner in No. 2 tank will be the same type as in No. 1, but its strength will be a half or less than No. 1. When the work is cleaned thoroughly in No. 1, No. 2 acts simply as a safety valve rather than a cleaner. Its strength is generally maintained by dragover from No. 1. No. 2 being low in strength, there is much less contamination of the rinse water when the work is transferred.

Most of the precautions that have been set up prior to rinsing have been established to insure good clean ware for the acid pickle. The rinse tanks are overflowing with hot, clean, soft water, the supply of which is sufficient to change the water about every 30 minutes.

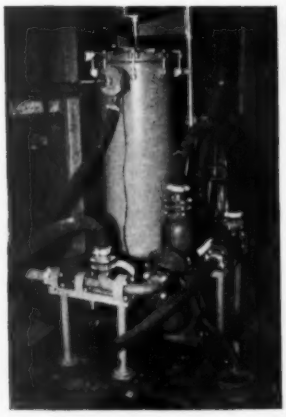
Lengthwise across the bottom of these tanks would be air lines operated with a trip valve, which would open when the basket of work is lowered into the tank. Thus, a violent agitation is produced which washes the surfaces, ledges, and corners of irregular shapes with force enough to dislodge clinging particles. This is particularly true when using hot water. If cold water were used, many of the particles, soft from the hot cleaner, would set or harden on the steel. These two hot, fresh water rinses will cleanse the ware of foreign matter so that when they are submerged in the acid nothing remains to retard its uniform action on the steel and scale. The work is already heated to pickling temperature. It is free of soap so that fatty acids will not form and cling to the steel, and the acid strength is not impaired by having to neutralize a film of alkali.

A selected wetting agent will be used in the acid pickle to keep down fumes and reduce surface tension, which will allow particles of scale and smut to sink to the bottom rather than float on top as a scum to catch in ledges and recesses on the work to later appear as black specks and dirt in the finished piece.

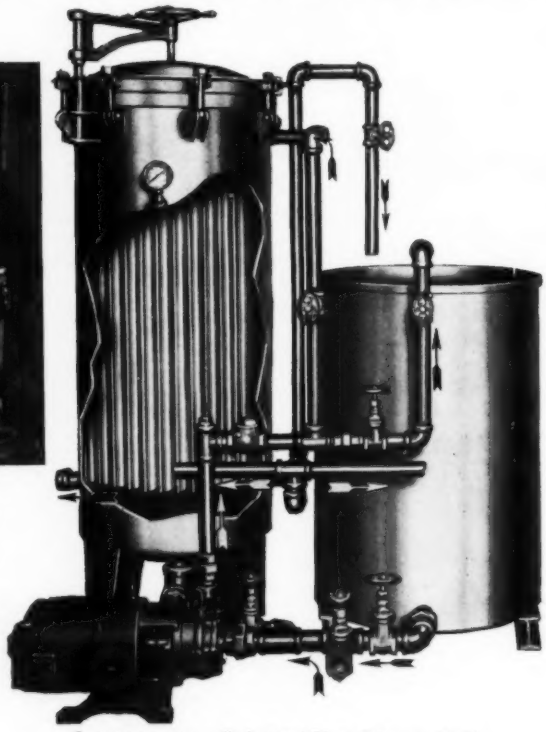
The rinse water after the acid will also be hot and fresh. This allows much better rinsing of the iron sulphate and free acid than a cold rinse. To promote the thorough rinse, air lines will also be installed in these tanks. With a plentiful supply of fresh water and the scrubbing produced by the air agitation, the work enters the nickel tank practically free of acid; therefore, it will not affect the pit of this tank unduly as would happen if highly acid work were introduced. This will produce a better

to Page 52 (Column 3) →

KEEP PICKLE ROOM SOLUTIONS "ALIVE" LONGER WITH *INDUSTRIAL* PRESSURE FILTERS



Above: This installation in a large enameling plant pickle room recirculates and filters 2,000 gal. of nickel tank solution per hour, operating approximately 8 hours out of 24.



A stationary type Industrial Plate Filter available in sizes with from 95 to 290 sq. ft. of filter area.

Industrial Filters offer you a modern and dependable clarification and purifying system to keep your pickle room producing at top speed.

Made in a wide range of sizes and capacities, both portable and stationary, they offer the convenient and labor saving method of filtering nickel or neutralizer solutions.

Save time, save money, and keep your new pickle room at top efficiency. Include Industrial pressure Filters in your plans for a *modern* plant. Send for specifications on a unit to meet your requirements.

Automatic Filter powder feeders, special alloy pumps, Filter cloth and Filter Aids

INDUSTRIAL FILTER & PUMP MFG. CO.
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Enameling methods in a high production refrigerator plant

(Continued from Page 16)

dirt and steel grindings, before the dipping operations. This is done to safeguard against contamination in the ground coat enamel.

There are four dip tanks containing ground coat enamel. Dipped at 1⅛ to 1¼ ounces dry per square foot, enamel is weighed every half hour to control exact weight. The weight is recorded for each tank.

The liners are then hung on a drier conveyor traveling at the rate of 25 ft. per minute, and are run through a drier heated by gas, 325° F.

After they are dried, the edges are reinforced with black edging enamel.

The liners are then hung on a radiant tube furnace conveyor travelling at ten to eleven feet per minute and burned in a continuous 41 ft. firing chamber furnace, with gradual heating from 300° to 1580° F. and cooling by the same method in reverse.

The liners are delivered by the furnace conveyor to the spray conveyor where they are hung directly on the white spray conveyor and passed under a water spray to cool them off to room temperature to make spraying possible. They then pass through a pressurized water-washed spray booth. Five men spray regular white enamel. The sixth man sprays a coat of acid resistant enamel in the bottom of the liner. He, also, inspects the entire liner for uneven spraying.

Servel considers it advisable to use a good acid resistant enamel on the bottom of liners, for although vegetable crispers normally cover the bottom many times these are removed and food acids may come in contact with the liner bottom.

An automatic blow-off booth

The liners are then run through a gas fired drier heated to 250° F. After thorough drying, outside flanges are brushed and they are run through an automatic blow-off booth to blow out the dry enamel that falls in them from the previous operation.

They are then transferred to a 56 ft. firing zone, radiant tube continuous furnace. This conveyor travels 25 ft. per minute. The liners are again inspected and blown out to make sure the finish coat has been applied properly and all operations performed to specifications. Again they are heated gradually, 300° – 1520° F., and cooled in the same manner. After they are cool enough to handle they are placed on the inspection conveyor and the final product inspected.

The liners that pass inspection are transferred to an overhead conveyor delivering them directly to the assembly line ready for assembly.

Flatware, evaporator baffles and door pans

The cleaning and pickling procedure on flatware, evaporator baffles and door pans is the same as on liners. The ground coat is handled in a similar manner. The white finish coat is applied somewhat differently. After the ground coat has been fired, flatware is placed on a slat conveyor and delivered to the flatware spray booth. This spray booth is, also, a pressurized water washed booth. A cable conveyor runs through the spray booth and drier. The drier is heated to 225° F. On this same conveyor, edges are brushed. After the brushing operation, pans are hung on the finish coat furnace conveyor and are fired with liners at the same speed and heat.

Before firing, pans are inspected to make sure that all previous operations have been performed according to specifications. After firing, the pans are removed from the furnace conveyor and placed on a slat conveyor and again inspected. From the slat conveyor they are placed in cardboard cartons and delivered to the assembly line, ready to use. Those few that do not pass inspection are reprocessed.

Cleaning and pickling procedure on holloware is the same as on liners. Ground coat is handled somewhat differently. Pickled parts are placed on trucks and delivered to the dip tank. Ground coat is dipped at 1¼ to 1½ oz. per sq. ft. Pans are dipped and drained on a conveyor travelling at 25 ft. per minute. After they have reached the station near the ground coat furnace they are hung on the ground coat furnace conveyor. The same furnace that liners are burned on also burns holloware, except on a different shift. The same chain speed is used, and also the same temperature.

After holloware is fired in ground coat, it is removed from the furnace conveyor and inspected to insure perfect coverage of raw metal. It is then stored in specially built box trucks. The next shift comes on and uses the same dipping conveyor for the finish coat. One of the interesting details I noticed was how heat is applied to the holloware on the conveyor to eliminate back runs when part is beaded.

After the part is through draining and enough heat applied to set the white enamel, it is turned over and set on needle point pedestals. White enamel is wiped from the flanges with beading sponges. After all white has been removed, black beading enamel is applied. The parts are then hung on the furnace conveyor. They are fired at 1540° F., chain speed 18 ft. per minute.

After firing they are removed from the furnace conveyor and placed on the same slat conveyor along with flatware. They, too, receive a rigid inspection and are packed in cardboard boxes and delivered to the assembly line ready to be placed in the refrigerator.

"The ceramic laboratory . . . to improve methods and lower costs"

Let me go slightly more into detail concerning the function of the laboratory. I quote Sheldon Lloyd: "The ceramic laboratory is a division of the engineering department. The laboratory is entirely separate from the enamel production department, but works hand in glove with production problems which include control of enamels, design and inspection of parts. The primary objective of

the ceramic laboratory is of a research nature; to investigate and to develop and improve both new and old porcelain enamels with regard to new usage in our products; to improve methods and to lower costs, and at the same time produce the best possible finish in relation to use values.

"All porcelain enamels used are first investigated and studied in the ceramic laboratory before they are actually used in production. Here tests are made on the preparation, application, and physical properties of the various porcelain enamels. A falling weight 'impact test' is made to determine the ability of the enamel to adhere to the base metal. A thickness gage determines the right thickness of enamel to go on our products. The thinner the porcelain enamel coating, the greater will be the impact resistance. New super-opaque enamels are now available which give a high degree of reflectance with thin applications of enamel. The reflectance or opacity of an enamel coating is determined by the use of a Hunter Reflectometer. In addition to these tests, mill formulae are re-adjusted and cross-bend tests are made to determine which enamel is best suited for processing in our production department. After porcelain enamels have passed all of these tests — the laboratory then recommends their usage in the production department."

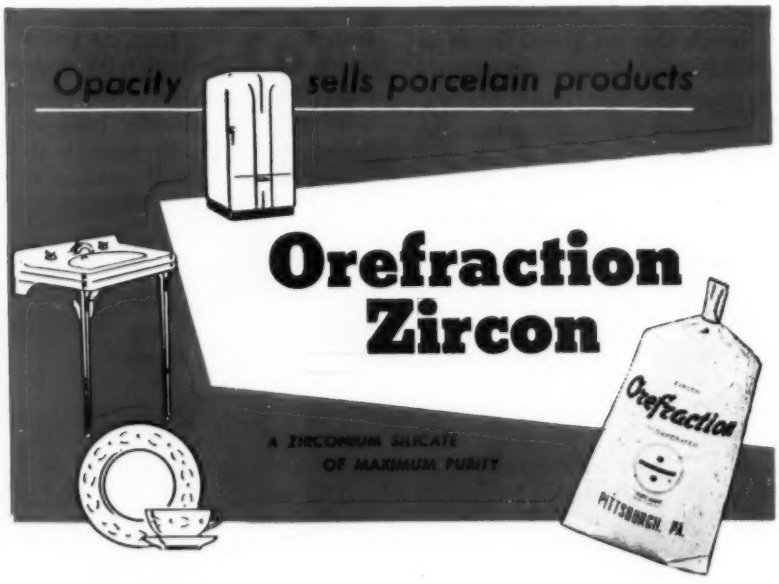
In conclusion, I quote Mr. Axford, concerning one instance to show how well Servel departments are geared together to solve production problems with efficient dispatch.

"Some weeks ago, our supply of Transite for a certain flue was closed off because of strikes in the supplier's plants. Unless a substitute could quickly be found, Servel assembly lines would have to be shut down. All departments hustled into the breach — Engineering, Metallurgical, Enameling, and others.

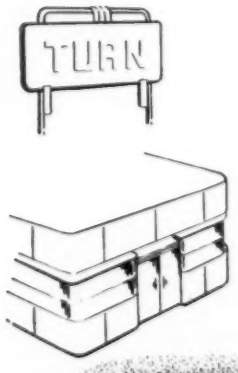
"From the design standpoint, the part seemed well-nigh impossible. There was a shortage of enameling iron, so seamless steel tubing had to be used. It needed to be seamless to prevent welding flashes on the I.D. which required absolute smoothness in the peculiarly contoured flue travel. The laboratory had to work out a method on steel. Problems of cleaning were encountered, since welding caused scale on steel which conventional pickling practise could not remove. The edge of the part had to be covered, which necessitated rounding and smoothing. There was extreme difficulty in working out the perfect covering of the edge.

"Engineering designed a flue shape of seamless tubing capable of being enameled. A pilot run was made in the laboratory. Within five days, these porcelain enameled parts in substitute for Transite were ready for assembly on the line and, since adversity is the mother of improvement as well as invention, the resultant flue was entirely satisfactory."

This flue looks far better, too, though it is a concealed part where appearance doesn't matter.



for ENAMELS • GLAZES • PORCELAIN PRODUCTS



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OREFRACTION RUTILE—now available for ceramic colorants

TRADE MARK U. S. PAT. OFFICE

→ *from Page 42*

ning the concern for five years, he amalgamated with the Central Potteries Ltd., Nagpur, with whom he was working before he came to the States.

Chief product of C. P. Enamels was signs. The company operated two coal fired box type furnaces for this work.

In India there are about ten sizeable plants manufacturing porcelain enameled steel kitchenware and hotel ware, and some hospital ware. This seems like a very limited production for a country of 400,000,000 people until we consider that the average annual income per capita is about $18.

Mass production and technical control as practiced in the United States are two of the greatest cost reducing factors in production of porcelain enamel, glass and pottery, in the opinion of Mr. Agashe. In India, where laborers in these fields may get only ten to twelve cents a day for a 9-hour work day, the selling price of a ceramic product is three times as high as a product of comparable quality manufactured in the United States.

Seven hundred scholarships are to be awarded by the Indian Government for advance training in the United States, Canada and England. Four hundred of these will be for training in this country; 200 in England and 100 in Canada.

Mr. Agashe is at present attending the University of Illinois on such a scholarship. He is one of four studying ceramics in this country. There is one other scholarship at Ohio State, and two at Alfred.

Our visitor has now been at Illinois for about three months and expects to remain there to obtain his M.S. degree in Ceramic Engineering and a Doctor's degree. He now has a Bachelor's degree from Benaras Hindu University, Benaras, India. The University is situated in the United Provinces on the fertile Ganges plain in Northern India. Mr. Agashe also has a post graduate diploma in metal enamelling from the same University.

It is the feeling of Mr. Agashe that the people of our respective countries get inaccurate impressions by depending entirely upon the usual news sources for information. He said: "I believe that if 50 people from India would come to the United States every year, and 50 from your country go to ours for study and exchange of information, it would bring about a much better understanding between our countries." This principle would, of course, apply to other countries.

Mullins Manufacturing Corporation has announced the appointment of J. B. Martin to the office of controller.

Federal Trade Commission issues frit order

In a recent order (No. 5155) pertaining to "porcelain enamel in the raw state," the Federal Trade Commission at Washington ordered five manufacturers of porcelain enamel frit to cease and desist from engaging

to Page 53 →

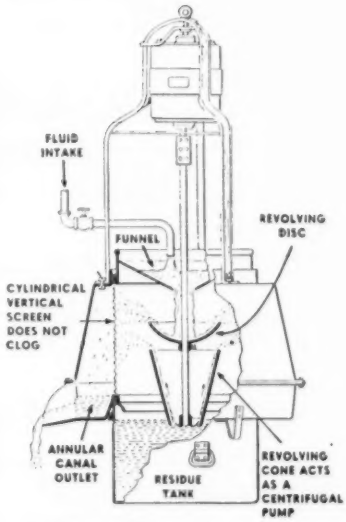
say Dont say "sieving"

Rotospraying . . .

ONLY ONE WORD is required to describe the most efficient and economical method of sieving porcelain enamel slip —ROTOSPRAYING. The first Rotospray sifters installed in porcelain enameling plants are still in daily operation. That's why Rotospray is the standard for the industry.

If you need Rotospray equipment for a new plant or to supplement Rotosprays now in use, order now. We are increasing production as rapidly as we can, but not fast enough to keep up with enamel industry expansion.

For information on the three available sizes, or to list your company for equipment as produced, write direct to Rotospray or to any of our authorized agents.



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Control and testing laboratory for a stove plant enameling division

(Continued from Page 21)

TYPICAL LABORATORY OPACITY CHECK

Plate Numbers	Gr. Ct. Weight per sq. ft. (1 side)	Finish Coat Weight per sq. ft.	% Reflectance Green Filter
1	29.812 grams	32.716 grams	73.5
2	28.718 "	39.927 "	75.5
3	28.521 "	45.809 "	77.0
4	30.116 "	51.109 "	79.5
5	28.692 "	57.110 "	81.0

One of the chief tests when checking new cover coat enamels is an opacity check for which this table shows typical data.

sibility of the laboratory in the control of production operations such as pickling and milling, and check tests on finished ware.

In the control of pickle room solutions, the cleaner tank, acid tank, nickel tank and neutralizer tank are checked by titration. A pH meter is also used to check the nickel tank, and the acid tank gets a periodic check of iron content, with frequency depending on the rate of production.

For mill room control, 100 gram milled slip enamels are used for laboratory checks. Samples are washed through a 200 mesh screen, dried, sifted and checked for fineness. Nine to 10% on a 200 mesh screen is standard for ground coat, and 2 to 3% for white cover coat.

Specific gravity checks are made regularly for both ground coat and cover coat. The mobility or flow test consists of dipping a ground coated cylinder, with 2 sq. ft. of surface, and weighing to determine the amount of pick-up. All milled enamels are subject to complete laboratory testing before they are released to the plant for production.

Production standards are established for the spray line and dip tanks. Pyrometers and furnace control instruments are also checked by the laboratory with the portable potentiometer.

Finished ware tests

As a followup to production line control, the laboratory selects random samples of the finished product for testing. The P.E.I. tests and ratings are used for acid resisting qualities; plant standards call for an "A" rating on this test.

Impact resistance is checked by using a standard drop weight test. As a thermal shock test, the assembled range is heated to full operating temperature and subjected to a cold water test at vulnerable points.

Suggested layout for a continuous furnace sanitary ware plant

(Continued from Page 30)

large ware vertically offers increased efficiencies.

The unfired ground coat is transferred directly from the ground coat dryer chain to the furnace chain. The fired ground coat is transferred to the cover coat spray chain, where it is inspected and allowed to travel through the cover coat spray system, or taken off and placed on the fired ground coat bank for storage. The ware that is sprayed in first cover coat travels through the dryer and then to the brushing area where any required brushing is done. It then travels through the blow-off booth and is transferred to the furnace chain. The fired first coat ware is transferred back to the spray chain and travels through the inspecting area. The ware then either continues through the spray line for final coat spray, or is transferred to the storage area. The procedure for final spray and fire is the same except that at the inspection area the accepted ware is transferred to finished ware bank and rejects are sent to be resprayed.

Cover coat spray

The cover coat spray system is identical to the ground coat system. It might be added that provision for cleanliness is doubly important in the cover coat operation.

Cover coat dryer

The dryer is almost identical with the ground coat dryer except that it is heated by indirect oil or direct fired gas heater. The exit end of the dryer is equipped with an air seal to curtain off the heat.

Brushing area

All cover coat brushing is done on the chain, due to weight and size of ware. This is facilitated by intermittent chain travel.

Blow-off booth

An enclosed booth is provided for blowing off dust remaining from the brushing operation as well as any shop dirt that may have fallen on the ware. This booth has suction to take off dust and aid in shop cleanliness.

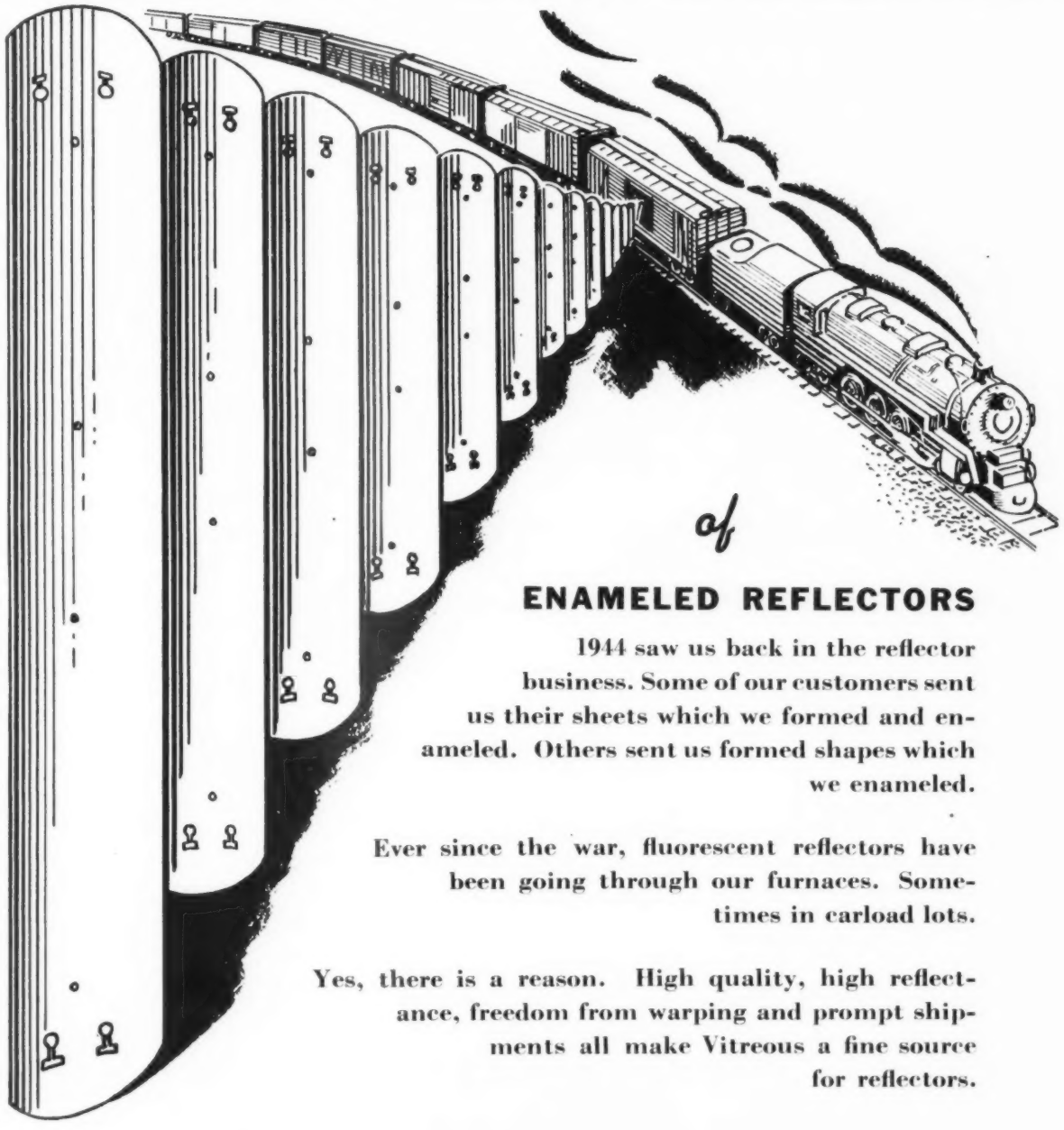
Future furnace

Space is provided for expansion through the addition of another continuous furnace, with provision for the cover coat line to feed it. This can be installed with a minimum amount of re-arranging. In the event that an additional furnace is installed, the cover coat dryer could be heated by recuperator heat from this furnace.

It is felt that the proposed layout takes advantage of the most recent advances in enameling technique and equipment design, and would produce top quality ware economically.

Use porcelain enameled ware for its beauty, durability and multiple uses. This ware saves heat because it conducts it efficiently; it may be used for cooking, serving or storing; and the smooth porcelain enameled finish makes it easy to clean.

CAR LOADS



of

ENAMELED REFLECTORS

1944 saw us back in the reflector business. Some of our customers sent us their sheets which we formed and enameled. Others sent us formed shapes which we enameled.

Ever since the war, fluorescent reflectors have been going through our furnaces. Sometimes in carload lots.

Yes, there is a reason. High quality, high reflectance, freedom from warping and prompt shipments all make Vitreous a fine source for reflectors.

VITREOUS STEEL PRODUCTS CO.

BOX 1791, CLEVELAND 5, OHIO *(Factory at Nappanee, Ind.)*

An industrial designer looks at porcelain enamel

(Continued from Page 18)

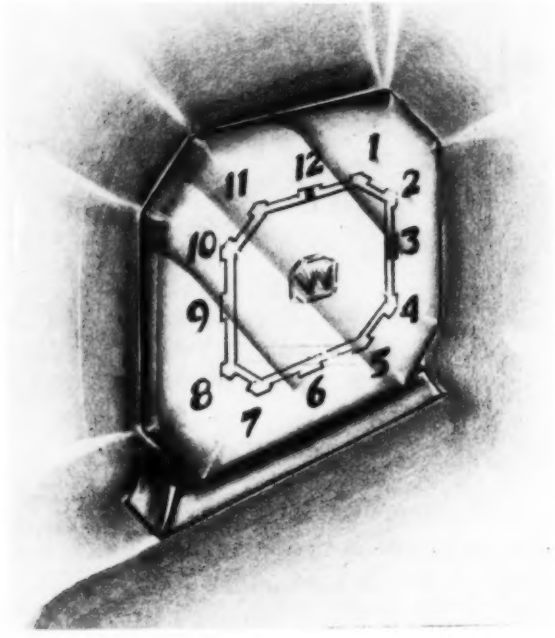
ened and still maintain a good surface finish.

Many things that have heretofore been made of brass and heavier nonferrous alloys, according to Mr. Thomson, can now be made in aluminum with a porcelain enamel finish. These items will include door knobs, drawer pulls, switch plates for the home, knockers, furniture handles and pulls of all kinds, fountain pen caps, trays and ash trays. The possibilities are limitless. Heretofore aluminum was not satisfactory for these things because it had to be natural finished, which was an uninteresting color; or, it was anodyzed, which was an expensive process and not particularly color-fast. Porcelain enamel finishing in pastel colors will open up all sorts of uses — especially when combined with the lightness in weight of aluminum.

One suggestion I have as a designer is a survey of the possible uses of porcelain enamel if conducted along the lines I have here suggested. While I realize that the industry has made a number of surveys, I am sure such a survey as this would reveal a market that is tremendous.

Another associate of mine, Miss Kay Iden, who is our Senior Designer, is a Pratt Institute graduate and a member of the American Designers' Institute. Miss Iden, in commenting on the women's angle on porcelain enamel finish, says: "To me, porcelain enamel has a distinct use in furniture for offices and stores, as well as homes. Ash trays, lamps and furniture lend themselves beautifully to this finish, either in whole or in part. Tops of coffee and cocktail tables would be ideal done in porcelain enamel as proof against dirt and liquor stains; also, end tables and dressing tables. Modern decorative moulding and perfume bottles are other possibilities. You do not see the base material when the top coat is applied like you do in wood and plastic finishes. Night tables in boudoirs, sideboards and serving tables which are now lacquered, would be alcohol proof and easily cleaned if done in porcelain enamel—of course, in color.

"Women have learned so definitely how to keep busy with activities outside their homes, and the help problem is so terrific at present, that any labor saver is welcomed by them. Therefore, the porcelain enameling industry, in devising new ways and uses for their finish in every room in the home, would make a contribution to modern living."



To children, clocks and color are both fascinating. Here is a suggested child's clock with concealed hands using contrasting color for time indications.

Training for the new ceramic age

→ *from Page 23*

in getting the building industry going at top speed. That Americans, and the world for that matter, will be in greater need of ceramic products because everyone will be thinking in terms of preparing for peace and better living. And, to take advantage of this spectacular increase in production of the entire ceramic industry, you must have trained men to operate and supervise your shops.

"Get your organization prepared for this prosperous period ahead. Set up a training program to properly instruct the new men whom you will hire to man your shop."

Cleaning and pickling before enameling

→ *from Page 46*

nickel coating and saves many additions to the nickel tank. If it is not necessary to use the nickel tank, then the work goes directly from the acid rinse to the neutralizer, which retains its strength and cleanliness much longer than it would if called upon to neutralize strong acid each time a basket is immersed.

After drying in a forced air dryer, the work should arrive at the dipping line in a condition conducive to coverage and draining.

In closing, it is well to dwell on the importance of constant chemical checking of the various pickle line solutions. Checks should be taken every two hours of cleaner, acid, nickel and neutralizers. These should be made by a competent person who has the responsibility of maintaining the tanks at their highest efficiency at all times.

Avoid the use of harsh abrasives when cleaning porcelain enameled ware. The ware has its own natural lustre that will last a lifetime, without any polishing if properly cared for.

→ *from Page 49*

in or continuing an alleged conspiracy for fixing prices and other "restraint-of-trade" practices.

Certain pricing practices of the manufacturers, said to have been found by the Commission to be discriminatory as between different purchasers of frit and in violation of the Robinson-Patman Act, also are prohibited by the order.

The order was issued after the respondents had filed answers to all the material allegations of the Commission's complaint and waived intervening procedure and further hearings as to the facts.

Pennsalt salesmen hold annual meeting

Pictured above are members of the Special Chemicals Division sales force of the Pennsylvania Salt Manufacturing Company at a regional meeting held recently at the Company's Philadelphia headquarters. Left to right (top row) are William P. Drake, manager of sales; W. J. Stoddard; R. W. Kress; J. J. Duffy, Jr., assistant manager of sales; C. S. Burhans; R. R. Pierce; J. S. Dimon; J. C. Hampson and V. A. Curll. (Seated) are W. R. Watson, J. W. Beaver, H. F. McIntyre, J. W. Manz, F. J. McDevitt, W. J. Hennessy, and H. R. Davis. Among the topics discussed at the three-day meeting were corrosion-proof cements, industrial cleaners, pickling and de-scaling products, and other products of the Special Chemicals Division.

This 40'x60' Quonset building was erected inside the Public Auditorium at Cleveland, O., to house and feature an exhibit of the Great Lakes Steel Corp.

Organize Philadelphia section ACS

The American Ceramic Society, Philadelphia Section organization meeting was held Friday, March 8, at the Engineers Club in that city.

Dinner was served at 6:30 p.m. to ninety-two people interested in ceramics.

W. L. Kenagy, acting as temporary chairman of the organizing committee, introduced C. S. Pearce, associate secretary of the American Ceramic Society. Mr. Pearce also brought greetings from Ross Purdy and gave a short report on the convention plans at Buffalo. He then introduced James Austin, of the U. S. Steel Co., Research Laboratories, and Trustee of the Society.

The following men were elected as the first officers of the Philadelphia Local Section: *Councilor* — Hobart M. Kramer, Bethlehem Steel Co.; *Chairman* — H. A. Heiligman, E. J. Lavino Co.; *Vice Chairman* — G. B. Remmey, R. C. Remmey Sons Co.; and *Secretary-Treasurer*—J. D. Clark, Foote Mineral Company.

Gernemtz to American Central

It is reported that W. F. Gernemtz is now associated with American Central Manufacturing Corporation's enameling division as shift foreman.

Mr. Gernemtz was formerly assistant superintendent of the Florence Stove Company, Kankakee, Illinois.

New advertising manager for kitchenware group

The Enameled Utensil Manufacturers Council announced the recent appointment of Charles E. Smith as advertising manager for the Council. Mr. Smith, who will open offices in the Merchandise Mart in Chicago, will be in charge of coordinating the activities of the advertising, publicity and educational campaigns of the Council and acting as liaison between the agencies and the membership.

The E.U.M.C. is at the present time conducting a national advertising campaign through the Ruthrauff & Ryan Chicago office, and a publicity and educational campaign through

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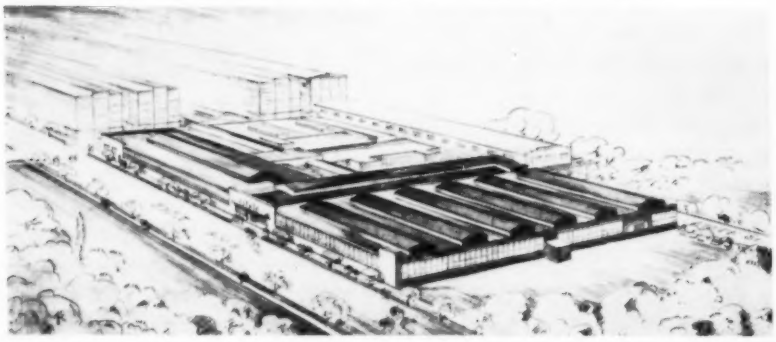
Estate Stove Company plant expansion



The architect's drawing shows the large plant expansion planned by The Estate Stove Company, Hamilton, Ohio. Dark shaded areas indicate the new addition and lighter areas are employed for present manufacturing space. The long low building (upper right) is the trackside warehouse completed in 1941. The low building at the left of the warehouse, to be flanked on two sides by the new addition, is the present enameling plant.

The new addition will increase the present 567,000 square feet of floor space by 85,000 square feet, a 15 per cent increase. Within the plant addition will be concentrated the entire production of sheet steel parts, from unloading steel from freight cars to the actual porcelain enameling of the fabricated pieces.

The structure, designed by Carl J. Kiefer Associates and to be erected by F. K. Vaughn Building Co., will incorporate features of modern industrial design such as complete fireproofing thruout, with brick and continuous steel sash side walls and a fire-proof roof.

→ *from Page 53*

Charles E. Smith

the Lawrence H. Selz Organization of Chicago, stressing the new porcelain enameled ware of the industry.

Mr. Smith was recently discharged

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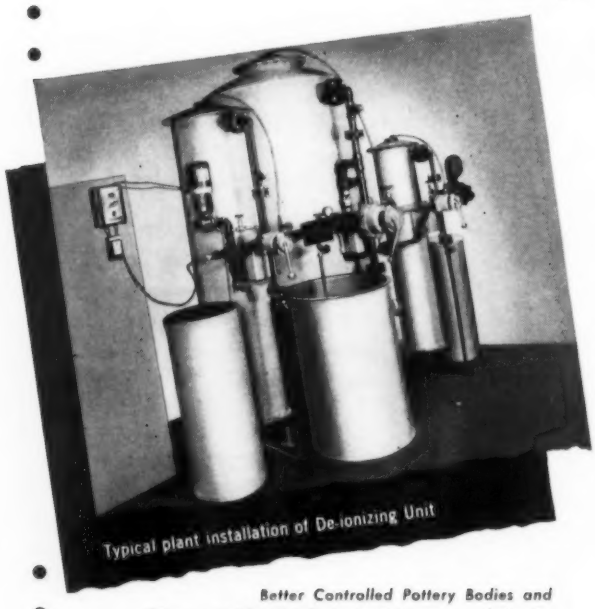
Lower your rejects by making your enamels with

DE-IONIZED WATER



Typical plant installation of De-ionizing Unit

Better Controlled Pottery Bodies and Glazes: ILLCO-WAY De-ionized Water can help the potter control his body and glaze compositions.

Reduction in rejects and elimination of copper heading have been obtained in leading ceramic plants when De-ionized Water was used in making the enamel. The varying acidic and basic reactions of natural waters affects the proper flocculation characteristics of frit and clay. Adjusting the enamel to make it function properly is costly as it requires materials and takes time.

You can assure yourself of a reliable water for enamel, by installing an ILLCO-WAY De-ionizing Unit. It will produce all the water your plant requires for capacity operation at a cost from 1% to 10% of that of distilled water. No fuel required, no cooling water. Maintenance is simple—no periodic dismantling for cleaning. Write for literature today!

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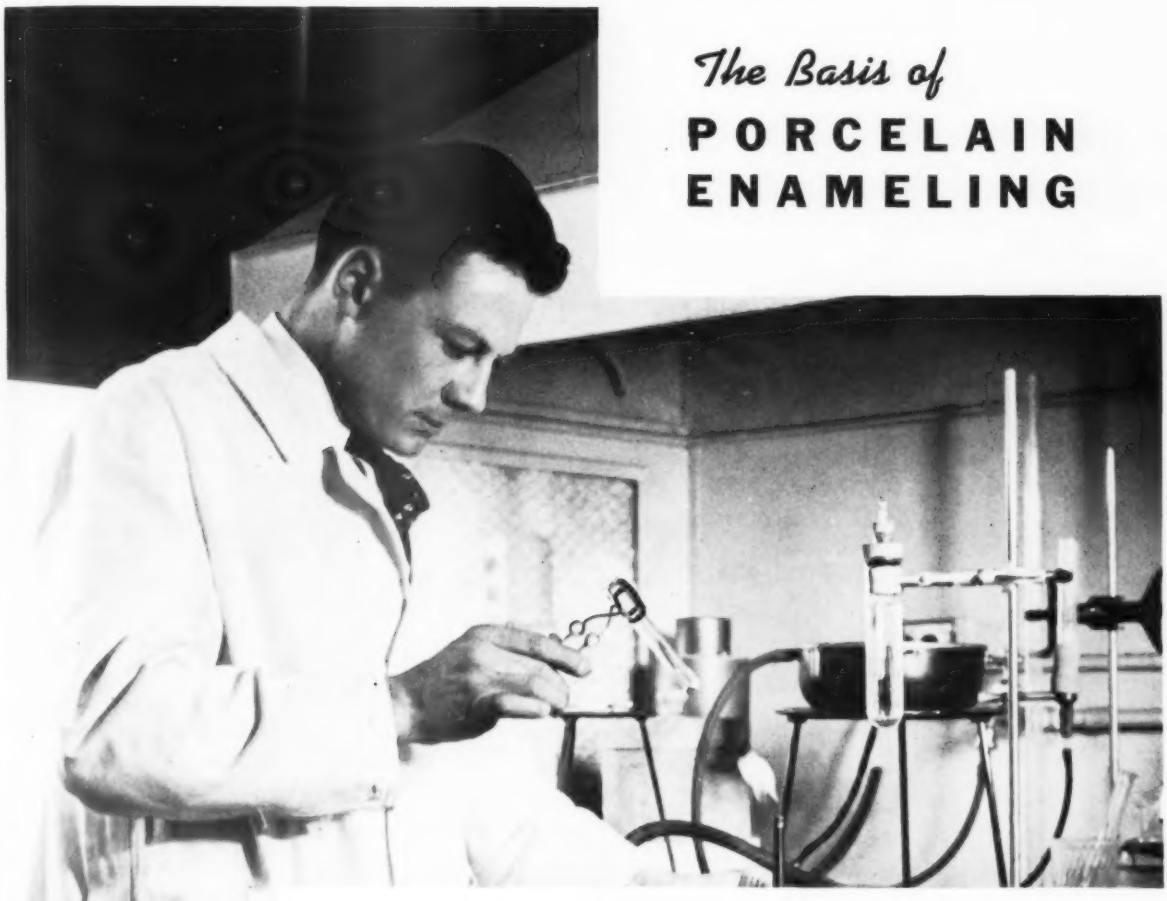

The Basis of
PORCELAIN ENAMELING

Ing-Rich salutes Modern Research for the very important part it plays in the porcelain enameling field. Without it, porcelain enamel would not lead the finishing field as the outstanding covering of metal surfaces.

Thousands of ceramic engineers, trained in colleges and industry during the last 25 years, have helped to develop porcelain enamel to this high pinnacle in the finishing field.

Ingram-Richardson has always employed skilled ceramic engineers and technicians in both their laboratory and plant to insure the precision manufacture of fine ground coat and cover coat porcelain enamel frits.

These frits will fit into your production like a duck takes to water, and futhermore, the use of Ing-Rich frits will help you cut your costs.

May we have the chance to prove our claims? Contact us NOW by phone, wire or letter.

Ingram-Richardson Manufacturing Co.

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ING-RICH PORCELFRIT "The Plant Tested Frit"